STEREO DOUBLE AUTO REVERSE CASSETTE DECK

X-E5

SERVICE MANUAL

(UD-502)

KENWOOD

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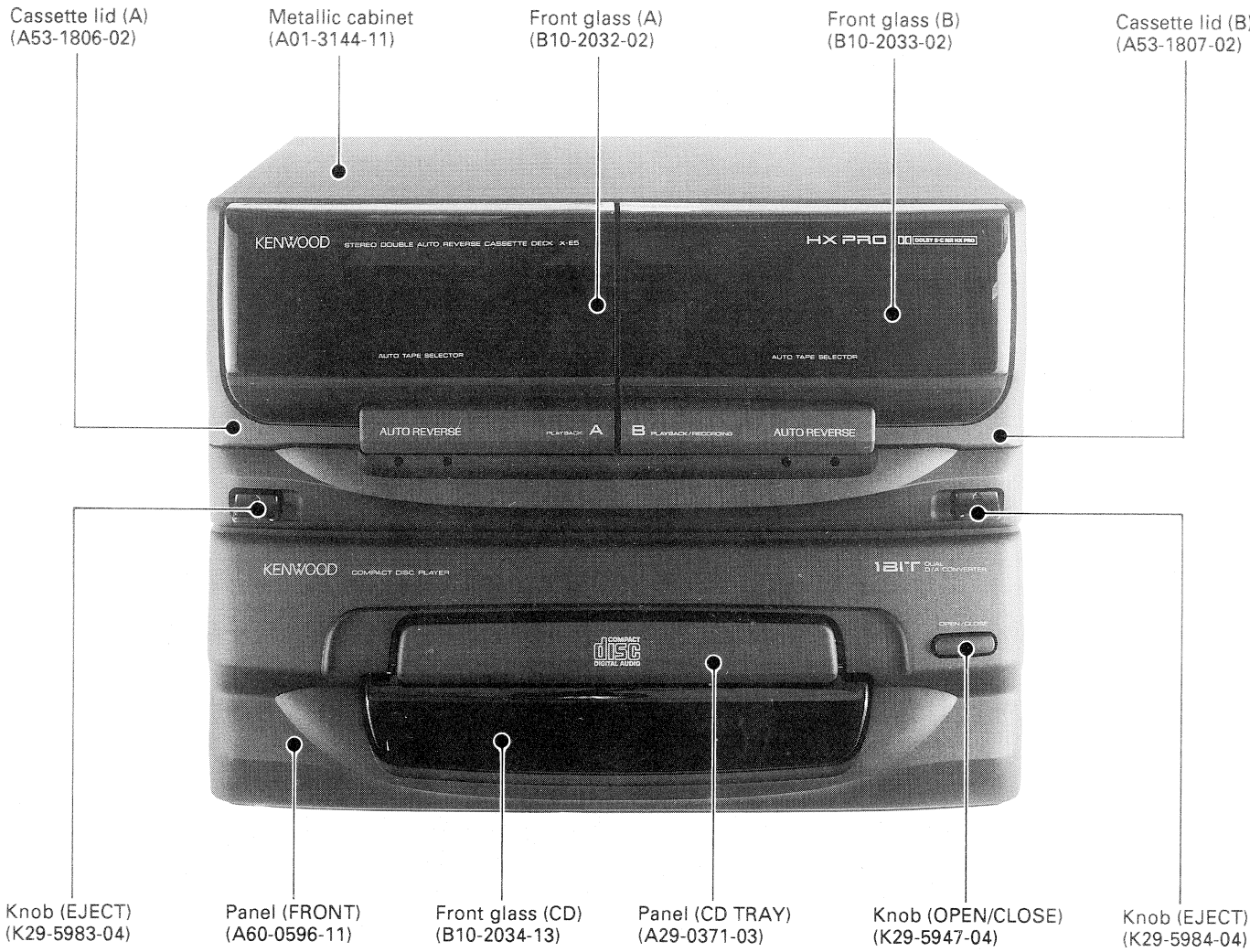

PRECAUTIONS FOR REPAIR

- Since the power for this device is supplied by the receiver/multi-command (A-E5), the latter or the jig (PS-93UA or PS-94UA) is required for repair of the former.
- Since this device does not have operation keys, we recommend to use A-E5. If this device is set to the test mode, the jig can be used
- For the operation of the cassette mechanism, see Service Manual (B51-4869-00) of RXD-C3/C3L.

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CONTENTS

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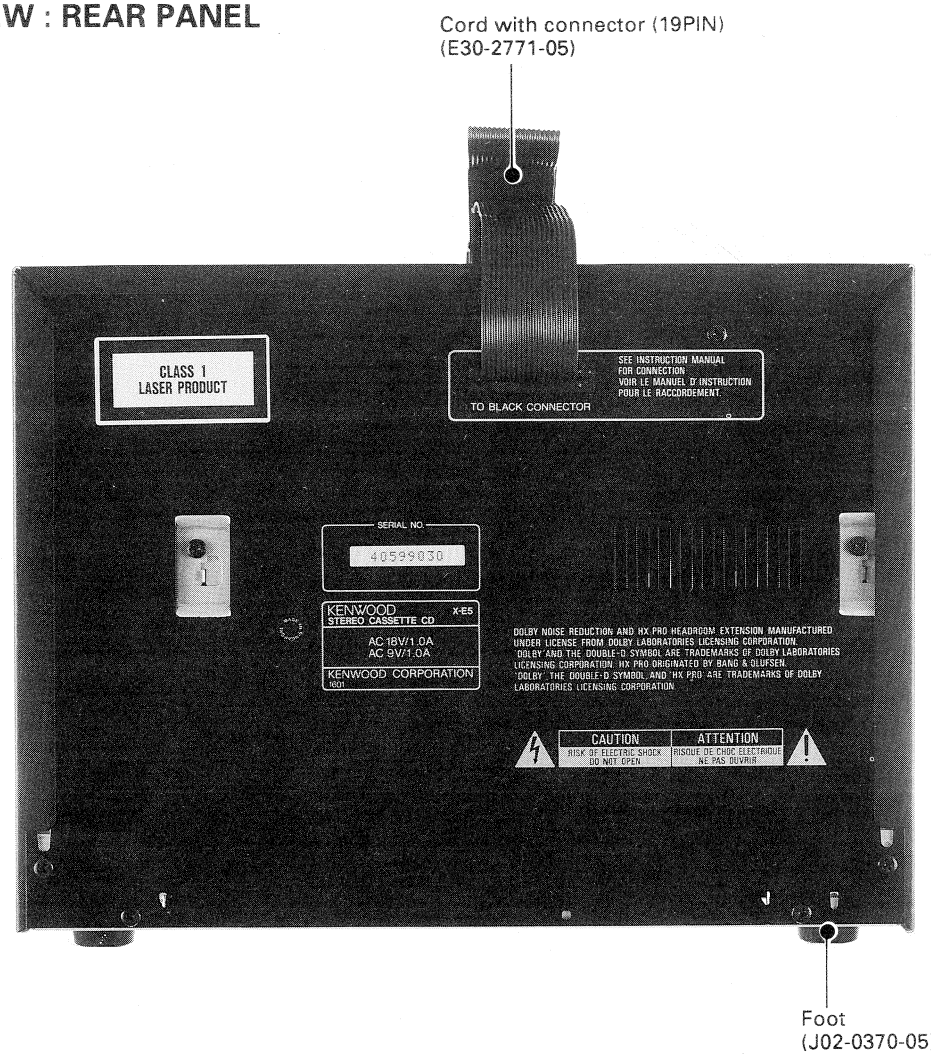
EXTERNAL VIEW : REAR PANEL



ACCESSORIES

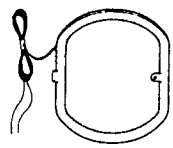
ACCESSORIES

System configuration

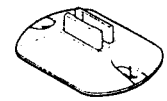
System (Destination)	Receiver/Multicommand	**Cassette deck/CD player**	System carton box (Parts No.)	Speaker (Other package)
UD-502 (M, X, Y)	A-E5	**X-E5**	H60-0225-04	LS-E5
UD-502 (E, T, G)	A-E5L	**X-E5**	–	LS-E5

- FM indoor antenna 1
  (T90-0182-15)

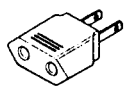
- AM loop antenna ass'y
  (T90-0195-05)



Loop antenna stand
(J19-3645-05)

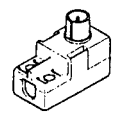


- AC plug adaptor 1
  (E03-0115-05)



Except for the U.S.A., Canada, Europe, U.K. and Australia. For the unit with a European AC plug in areas other than Europe.

- Antenna adaptor 1
  (T90-0198-05)



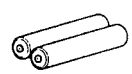
For U.K. and Europe.

- Speaker cords 2
  (E31-5479-08)

- Remote control unit (RC-E5) 8
  (A70-0981-05)

Battery cover
(A09-0106-08)

- Batteries 2



Speaker cords are packed with the Speakers.

Beware of condensation

When water vapor comes into contact with the surface of cold material, water drops are produced.

If condensation occurs, correct operation may not be possible, or the unit may not function correctly.

This is not a malfunction, however, and the unit should be dried. (To do this, turn the POWER switch ON and leave the unit as it is for several hours.)

Be especially careful in the following conditions :

- When the unit is brought from a cold place to a warm place, and there is a large temperature difference.
- When a heater starts operating.
- When the unit is brought from an air-conditioned place to a place of high temperature with high humidity.
- When there is a large difference between the internal temperature of the unit and the ambient temperature, or in conditions where condensation occurs easily.

X-E5

PS-93UA or PS-94UA

Model : PS-93UA or PS-94UA

Power supply for the audio model UD series.
Audio signal lines in 15P and 19P flat cable are connected to RCA connectors.

Explanation of the function

① **POWER SWITCH**
This switch should be turned on when using the 15 pin PRE CD DECK ③, the 19 pin PRE CD DECK ⑤ and 4 pin power supply ⑦.

② **15 PIN POWER AMP**
Connect to a system which require the 15 pin flat cable for connection, when check the power amp. section.
AC power source is not output from the terminal.
The signals are input and output to the RCA terminals and SYNC terminal on the front panel.
(ex : A-711, A-722, A-A7, B-992, B-A9, etc)

③ **15 PIN PRE CD DECK**
Connect to a system which require the 15 pin flat cable for connection, when check the functions except power section AMP.
The AC power are supplied to the pin No.12, 13 for 9V and the pin No.14, 15 for 16V from the terminal.
The signal flow are same as 15 pin power AMP terminal.
(ex : DP-711, DP-722, DP-A7, C-922, X-711, X-722, X-A7, etc)

④ **19 PIN POWER AMP**
Connect to a system which require the 19 pin flat cable for connection, when check the power AMP section.
The AC power is not supplied in the terminal.
The signals are input and output to the RCA terminal on the front of panel.
(ex : A-B7, A-B3, B-B9, A-E5, A-E7, B-E9, etc)

⑤ **19 PIN PRE CD DECK**
Connect to a system which require the 19 pin flat cable for connection, when check the component except power AMP. This terminal have the 4 system AC power supplies which is located to the pin No.13 to pin No.19.
(ex : X-B9, X-B5, X-B3, C-B9, DP-B5, DP-MB5, X-E5, X-ME5, X-E7, X-ME7, DP-E9, X-E9, C-E9, etc)

⑥ **SYNC TERMINAL**
Connect to the SYNCHRO CHECK JIG KSJ-0816. It can be controlled the system code 8 bit or 16 bit to the test set.

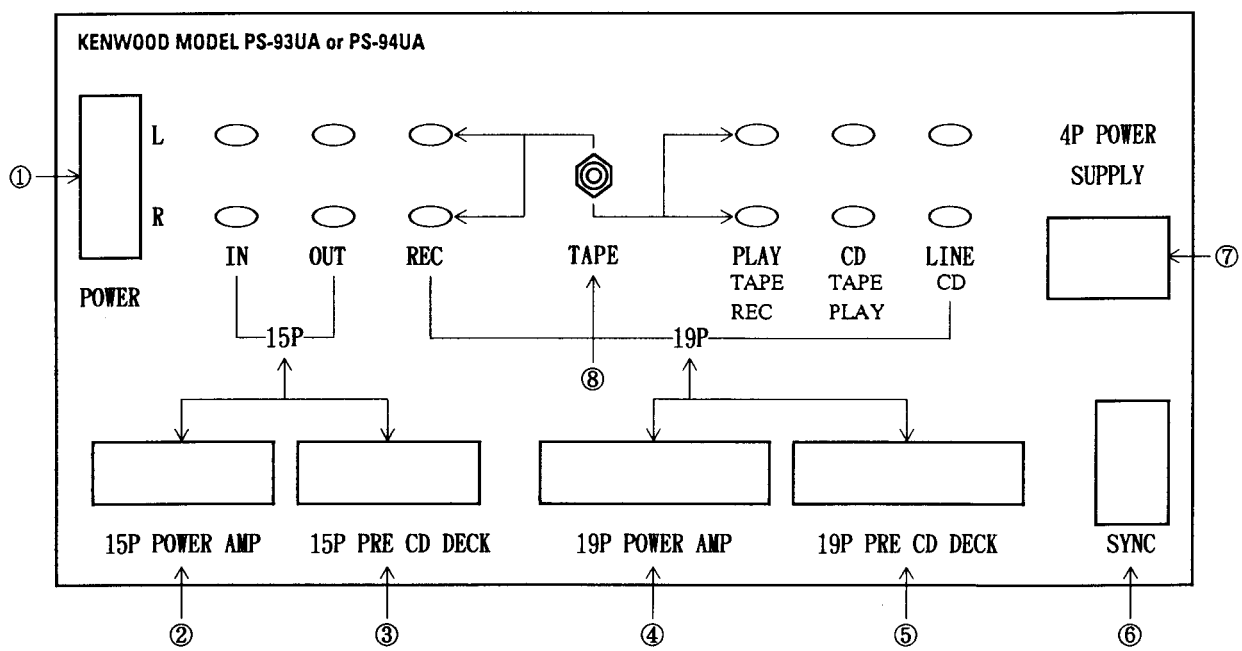
⑦ **4 PIN POWER SUPPLY**
Output terminal for AC 9V and AC16V.
It can be used supply the AC power to DECK, CD, TUNER for MIDI system.

⑧ **TAPE SWITCH**
The signal for deck of 19 pin terminal are share a well with the REC and PLAY.
So, please change the TAPE SW when DECK mode is PLAY or STOP then turn to the play, when DECK mode is REC or REC pause then turn to the REC.
(ex : X-B9, X-B5, X-B3, X-E9)

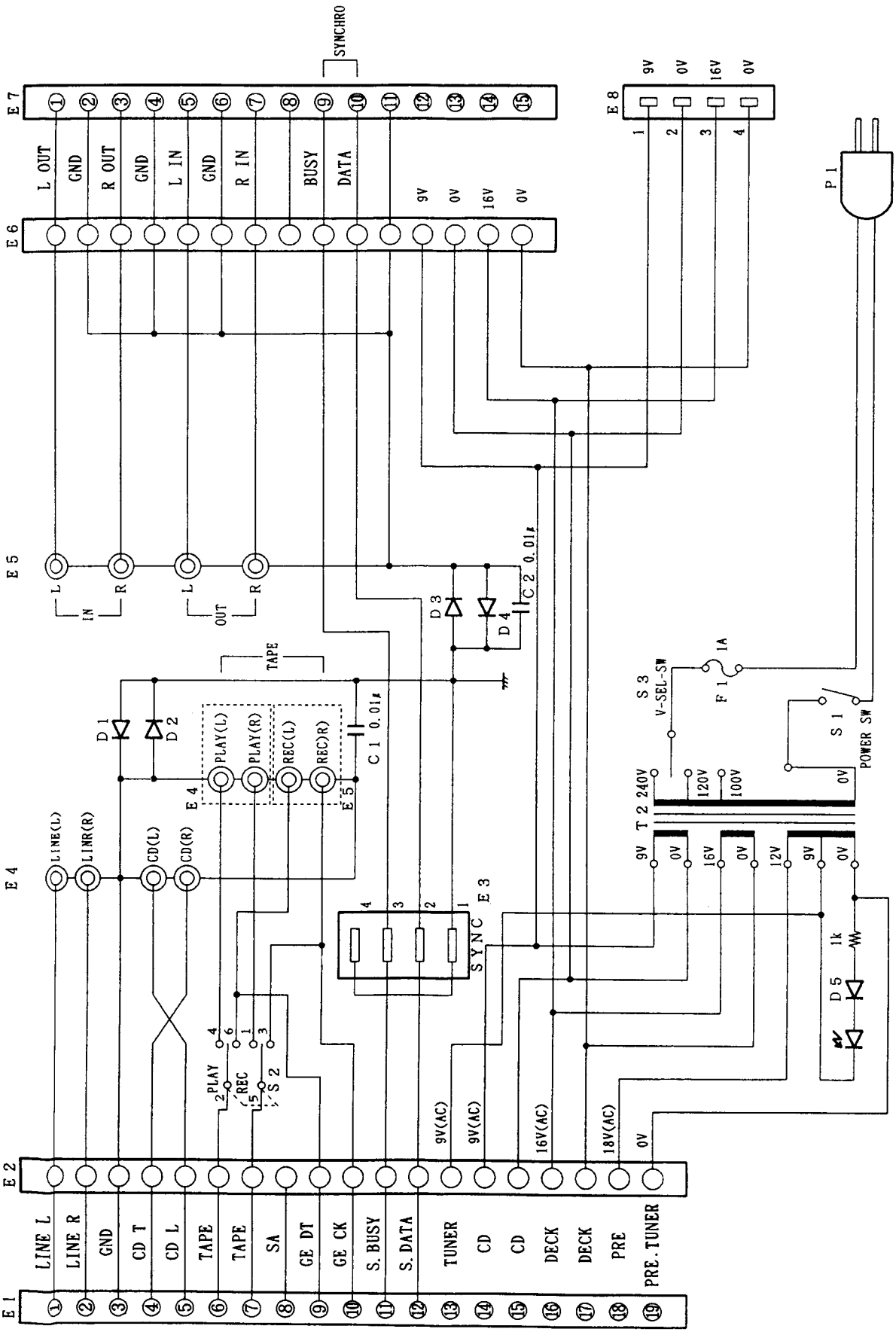
Note

For limited power supply's capacity, maximum connection is only one sets.
Do not connect a set together both with the 15 pin terminal and 19 pin terminal.

* In/output signals will shift as specified in the caution label when A-E5, A-E7, X-E5, X-ME5, X-E7, and X-ME7.
PLAY → TAPE REC
CD → TAPE PLAY
LINE → CD

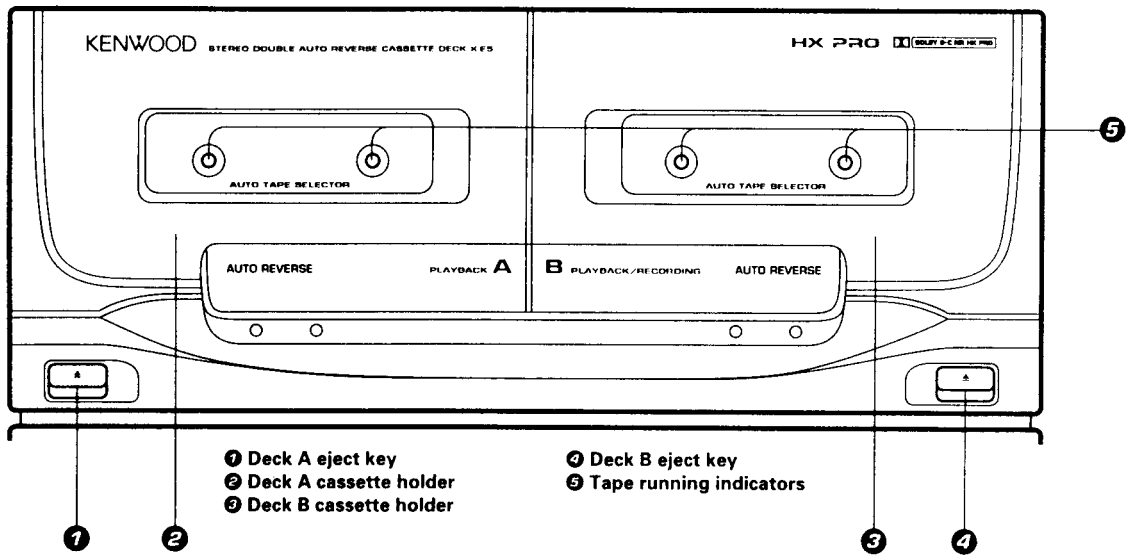


PS-93UA or PS-94UA

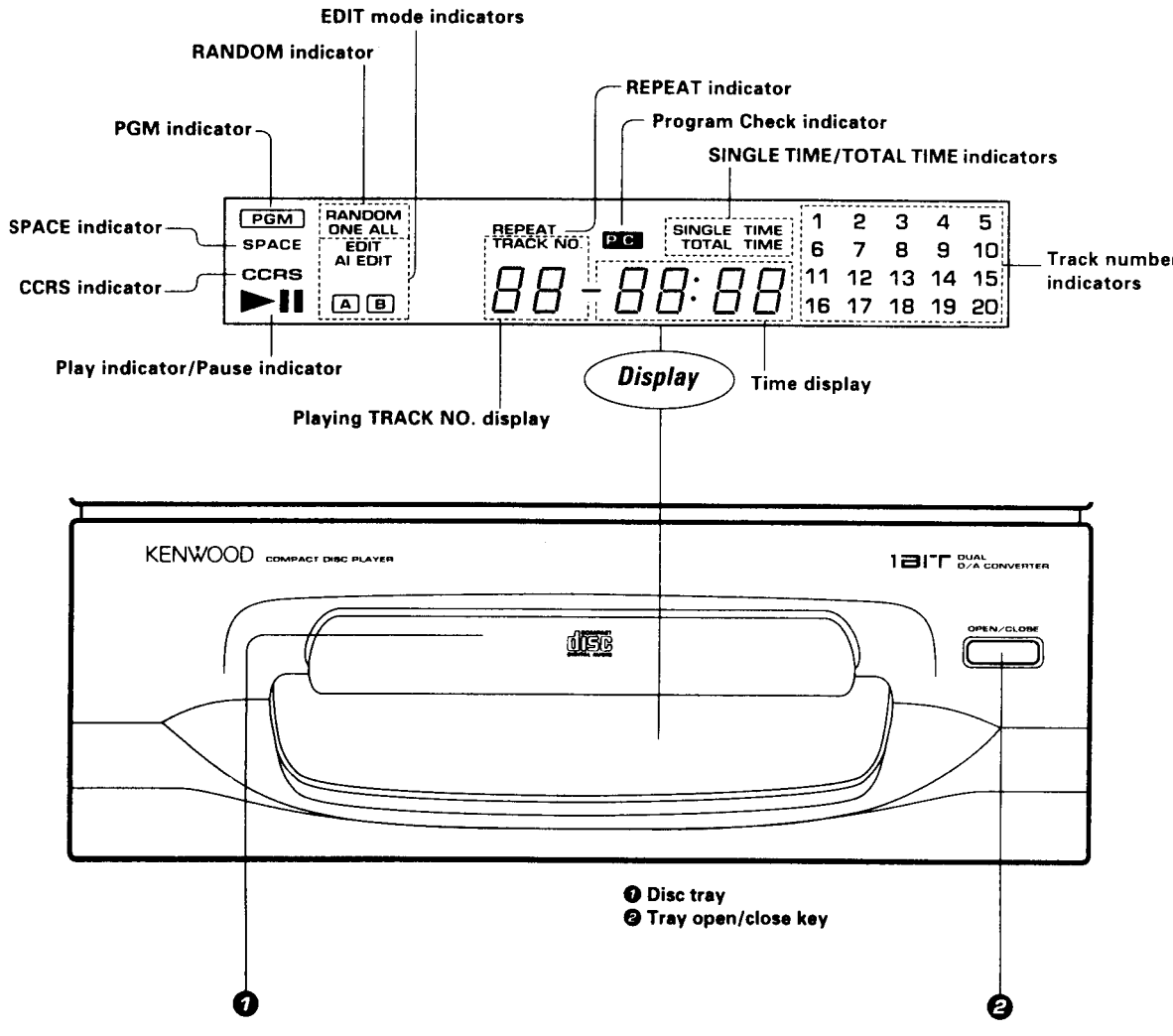


CONTROL

Cassette deck unit



CD player unit (UD-502)



REMOTE CONTROL OPERATION

Remote control unit

Some of the keys of this remote control unit have variable functions. Before pressing one of these keys, please to make sure that the input of the system has been set to the desired source.

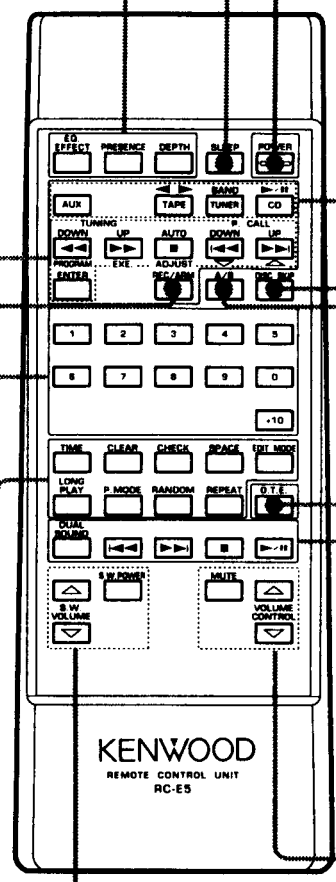
Graphic equalizer operation keys
EQ.EFFECT :Press to select a graphic equalizer effect.
PRESENCE :Press to select a presence effect.
DEPTH :Press to add depth to the sound field.

The functions are variable depending on the input mode or the power ON/OFF status.

REC/ARM key
Press to start recording. When the key is pressed during recording, the tape stops after leaving a non-recorded space of 4 seconds.

Numeric keys
Function as the numeric keys of the CD player when the CD input is selected.

CD player operation keys
TIME :Press to switch the time display mode.
CLEAR :Press to clear the contents of a program.
CHECK :Press to display the programmed contents in order.
SPACE :Press to leave non-recorded spaces of a few seconds between the programmed tracks.
EDIT MODE :Press to select the edit recording mode.
LONG PLAY :Press for long-hour playback.
P.MODE :Press for program playback.
RANDOM :Press to start random playback.
REPEAT :Press to start repeated playback.



Model: RC-E5
Infrared ray system

SLEEP key
Press to activate the sleep timer function.

POWER key

Input selector (basic operation) keys

DISC SKIP key
Press to select the disc to be played on the CD player.
(This key is invalid with the UD-502.)

A/B key
Press to select the cassette deck be operated.

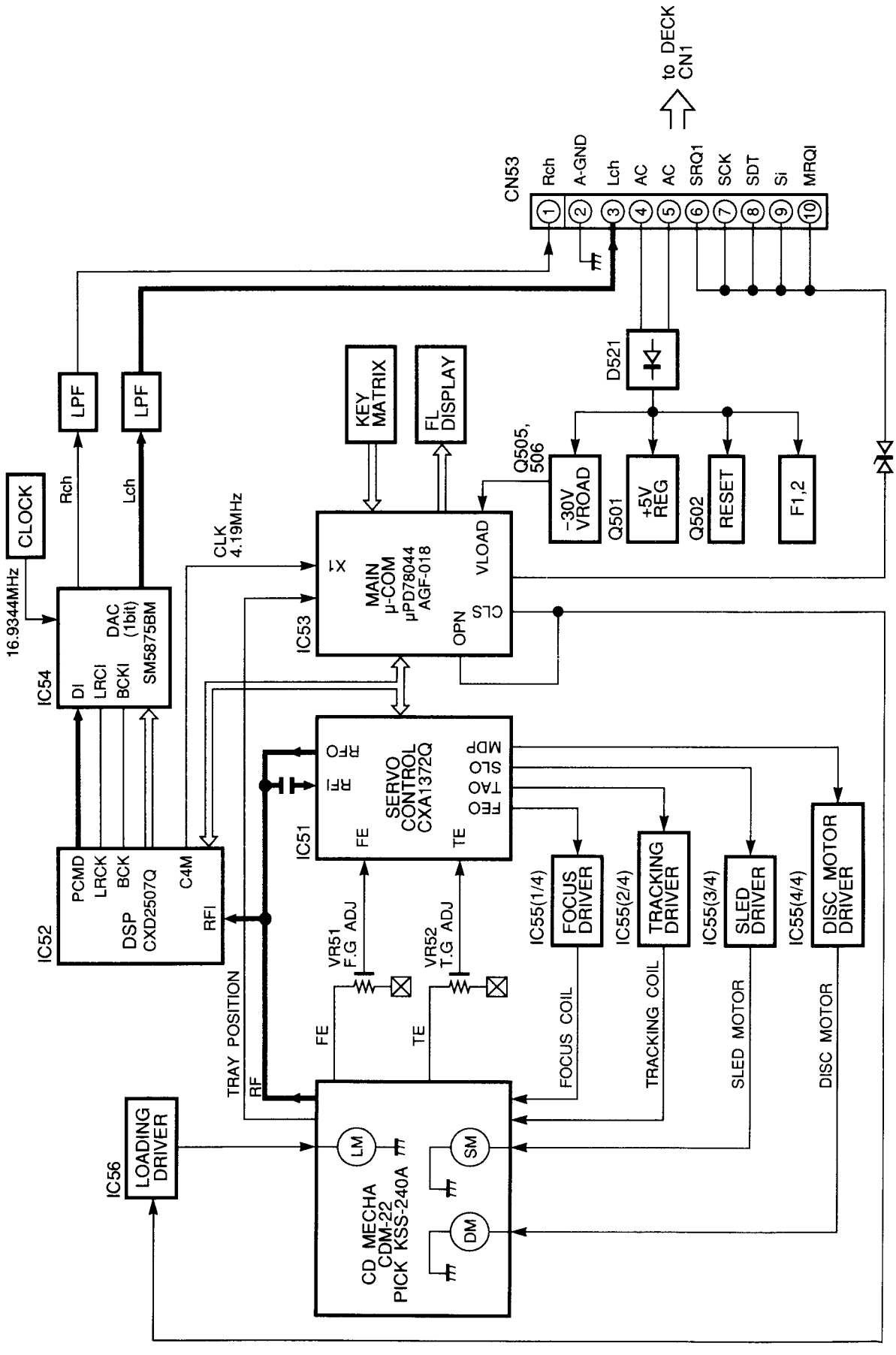
O.T.E. (One-Touch Edit) key
Press to record the CD track being played onto tape, etc.

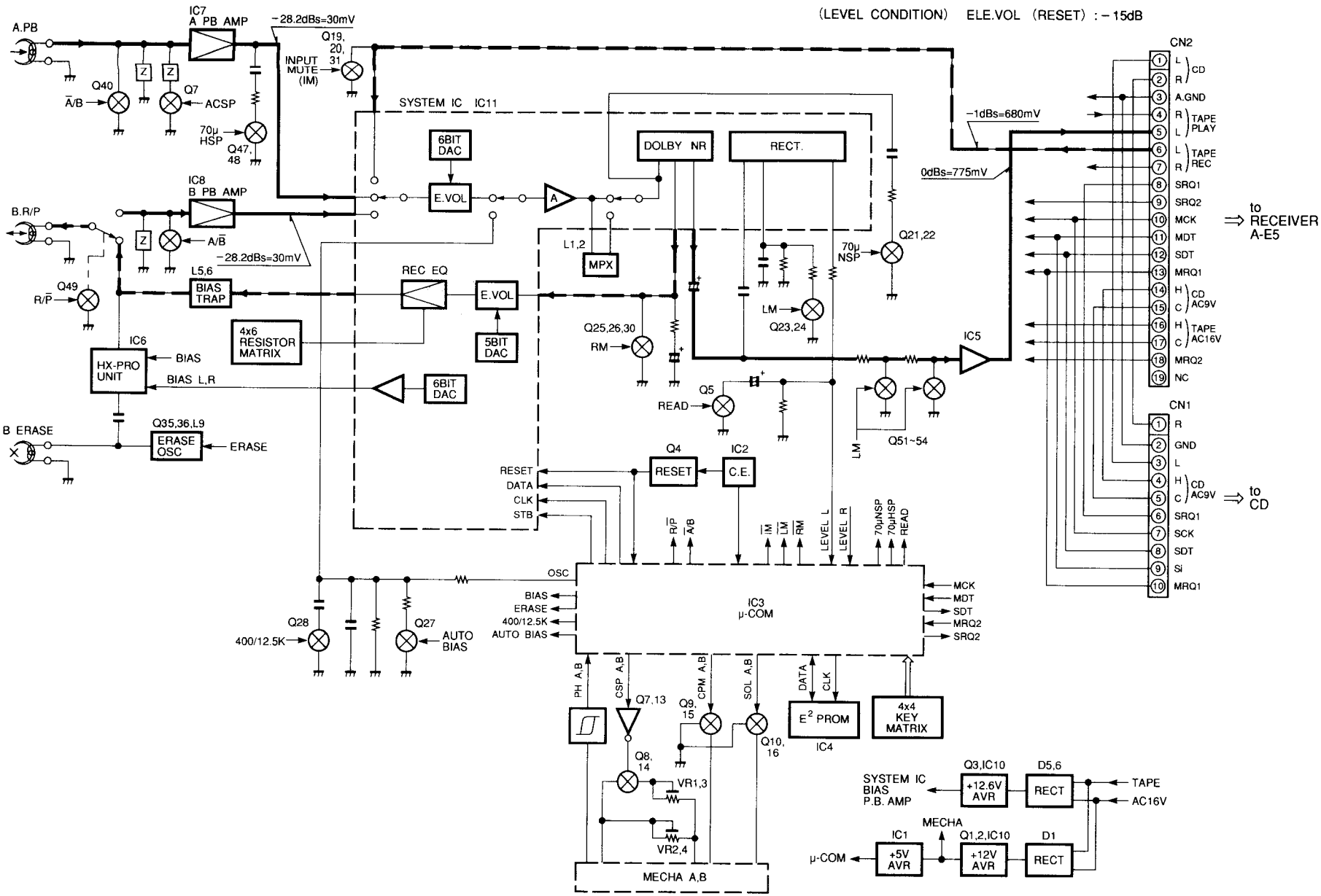
DUAL SOUND key
Press for Environmental Sound play (mixed playback of CD and another source).
⏮, ⏭, ■ and ▶/II keys
Use these keys to operate the CD player during environmental sound play.

VOLUME CONTROL keys
Press to adjust the overall volume. When these keys are pressed, the current volume level is displayed on the receiver unit.
MUTE key
Press to mute the sound temporarily.

Super woofer operation keys
S.W. VOLUME
:Press to adjust the volume of the super woofer (optional).
S.W. POWER
:Press to switch the power of the super woofer (optional).

BLOCK DIAGRAM : CD





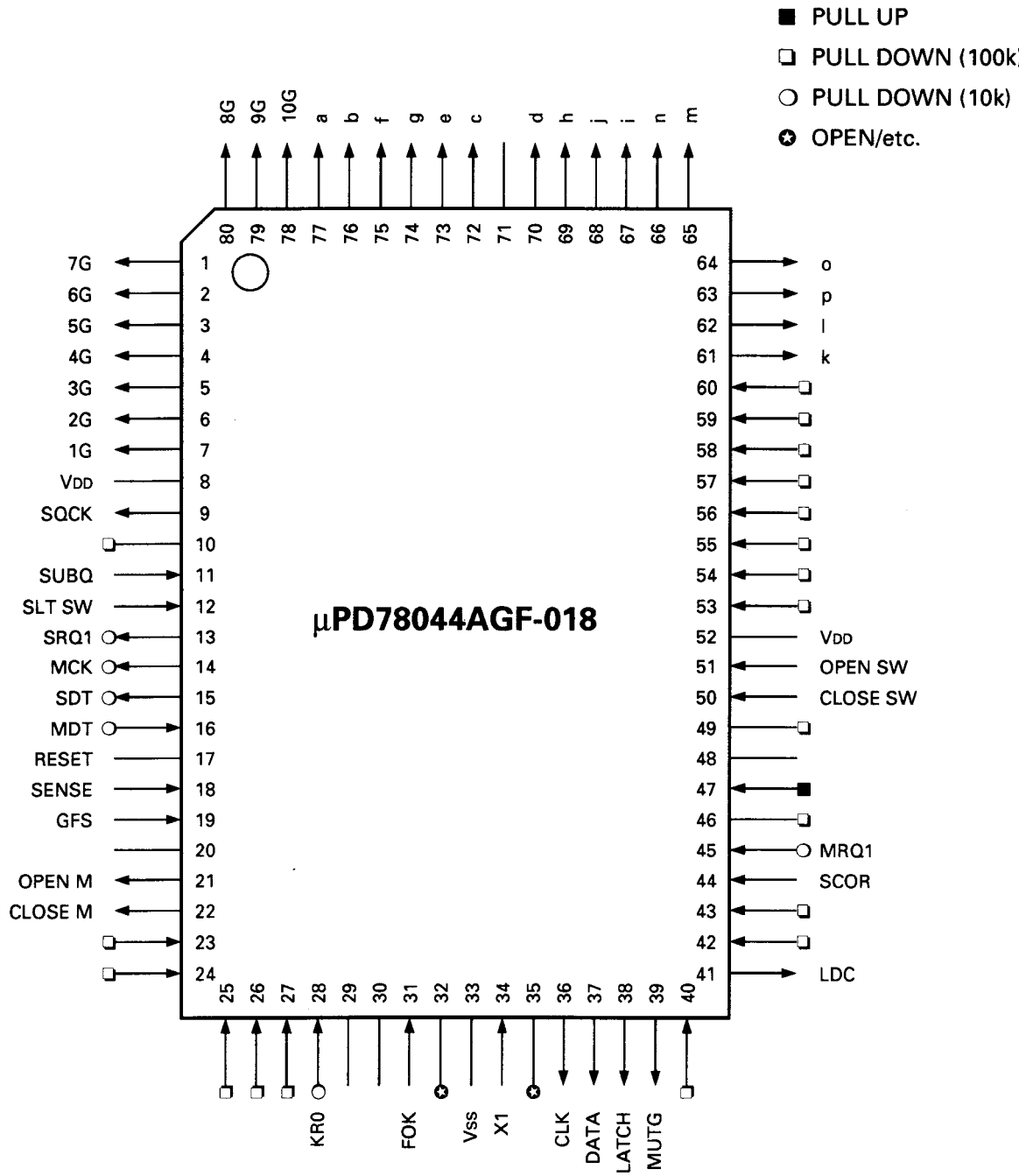
BLOCK DIAGRAM : DECK

X-E5

CIRCUIT DESCRIPTION

1. CD μ-com : μPD78044AGF-018 (X28-2662-70 : IC53)

1-1. Pin connection



CIRCUIT DESCRIPTION

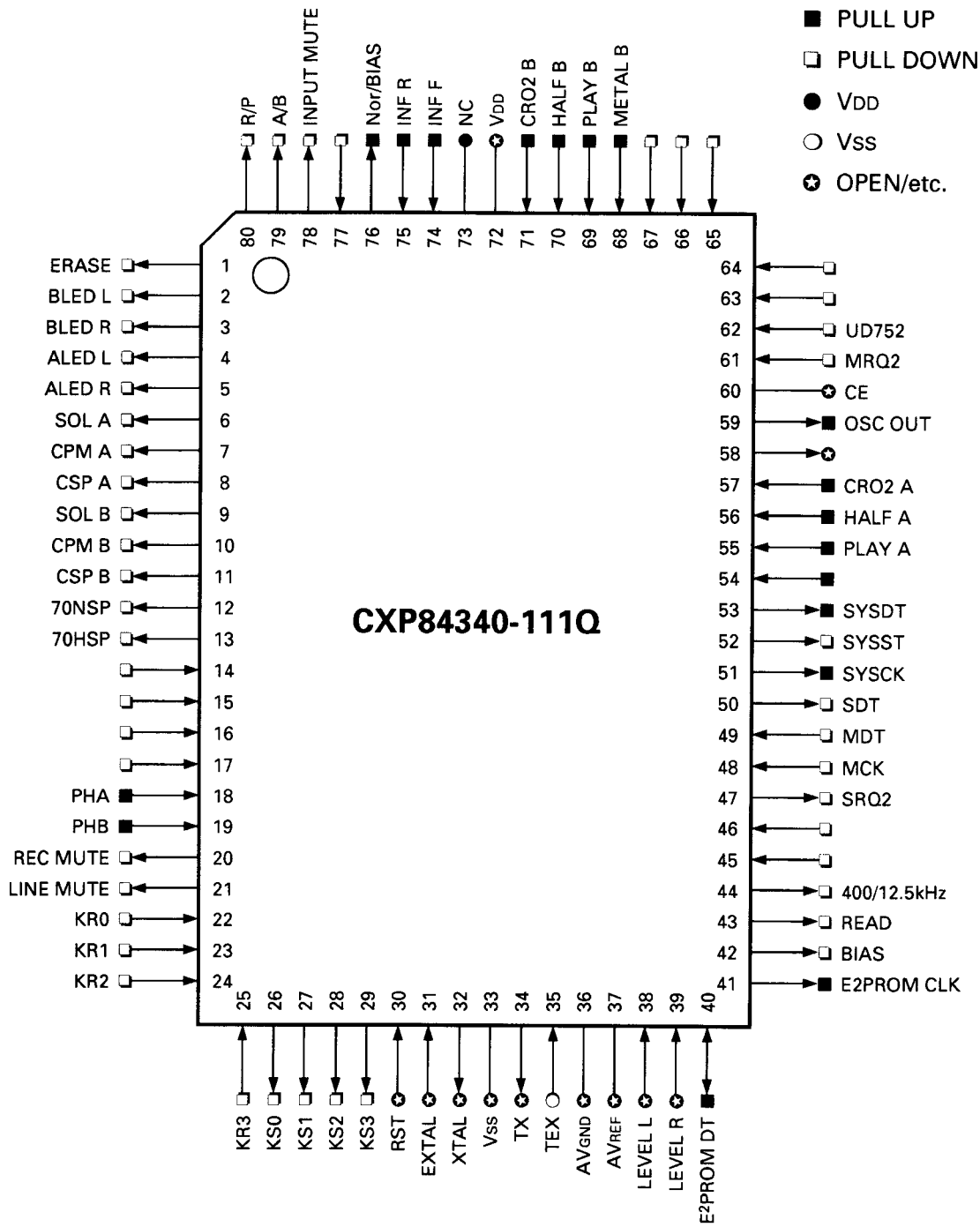
1-2. Pin function

Pin No.	Pin name	I/O	Function	Disposal
1~7	7G~1G	O	Grid 7~1 for FL display.	
8	V_{DD}	–	Power supply. (+5V)	
9	SQCK	O	CXD2507Q Output of clock to read Q data	
10	–	–	No used.	PULL DOWN
11	SUBQ	I	CXD2507Q Input Q data.	
12	SLT SW	I	Input start limit switch.	
13	SRQ1	O	For system communication. Output request.	
14	MCK	O	For system communication. Output clock.	
15	SDT	O	For system communication. Output data.	
16	MDT	I	For system communication. Input data.	
17	RESET	–	Reset	
18	SENSE	I	CXD2507Q Input sense.	
19	GFS	I	CXD2507Q GFS detect input.	
20	–	–	No used.	GND
21	OPEN M	O	Open motor control.	
22	CLOSE M	O	Close motor control.	
23~27	–	I	No used.	PULL DOWN
28	KR0	I	Key return 0.	
29, 30	–	–	No used.	V_{DD}, GND
31	FOK	I	FOK detect input.	
32	–	–	No used.	OPEN
33	V_{SS}	–	GND.	GND
34	X1	I	CXD2507Q Input system clock.	
35	–	–	No used.	OPEN
36	CLK	O	CXD2507Q Output clock.	
37	DATA	O	CXD2507Q Output data.	
38	LATCH	O	CXD2507Q Output latch.	
39	MUTG	O	Digital mute control.	
40	–	I	No used.	PULL DOWN
41	LDC	O	Output laser signal.	
42, 43	–	I	No used.	PULL DOWN
44	SCOR	I	Sub code frame sync detect input.	
45	MRQ1	I	For system communication. Input request.	
46	–	–	No used.	PULL DOWN
47	–	I	No used.	PULL UP
48, 49	–	–	No used.	GND, PULL DOWN
50	CLOSE SW	I	Input close switch.	
51	OPEN SW	I	Input open switch.	
52	V_{DD}	–	Power supply. (+5V)	
53~60	–	I	No used.	PULL DOWN
61~68	k, l, p, o, m, n, i, j	O	Segment k, l, p, o, m, n, i, j for FL display. (SCAN7~0)	
69, 70	h, d	O	Segment h, d for FL display.	
71	–	–	No used.	GND
72~77	c, e, g, f, b, a	O	Segment c, e, g, f, b, a for FL display.	
78~80	10G~8G	O	Grid 10~8 for FL display.	

CIRCUIT DESCRIPTION

2. DECK μ-com : CXP84340-111Q (X28-2662-70 : IC3)

2-1. Pin connection



CIRCUIT DESCRIPTION

2-2. Pin function

Pin No.	Pin name	I/O	Function
1	ERASE (PF3)	O	• Port for turning on/off ERASE head. • Turned on only in REC operation. H : ON, L : OFF
2	BLED L (PF4)	O	• Port for LED on left side of A-mechanism reel shaft. • Lights up when power is turned on. Flashes while mechanism is in operation, however. H : Lighting up, L : Going off
3	BLED R (PF5)	O	• Port for LED on right side of A-mechanism reel shaft. • Lights up when power is turned on. Flashes while mechanism is in operation, however. H : Lighting up, L : Going off
4	ALED L (PF6)	O	• Port for LED on left side of B-mechanism reel shaft. • Lights up when power is turned on. Flashes while mechanism is in operation, however. H : Lighting up, L : Going off
5	ALED R (PF7)	O	• Port for LED on right side of B-mechanism reel shaft. • Lights up when power is turned on. Flashes while mechanism is in operation, however. H : Lighting up, L : Going off
6	SOL A (PD0)	O	• Port for turning on/off A-mechanism solenoid. • Condition of mechanism is changed by changing length of time while this port is set to H level. Turned on only during transition. H : ON, L : OFF
7	CPM A (PD1)	O	• Port for turning on/off A-mechanism capstan motor. • Mechanism is in operation, this port is kept at H level. Capstan motor is turned off only when mechanism is stopped. H : ON, L : OFF
8	CSP A (PD2)	O	• Port for speed control of A-mechanism capstan motor. • While this port is at L level, capstan motor turns at double normal speed. Set to L level only while high-speed dubbing and transition of mechanism. H : Normal, L : Double speed
9	SOL B (PD3)	O	• Port for turning on/off B-mechanism solenoid. • Condition of mechanism is changed by changing length of time while this port is set to H level. Turned on only during transition. H : ON, L : OFF
10	CPM B (PD4)	O	• Port for turning on/off B-mechanism capstan motor. • Mechanism is in operation, this port is kept at H level. Capstan motor is turned off only when mechanism is stopped. H : ON, L : OFF
11	CSP B (PD5)	O	• Port for speed control of B-mechanism capstan motor. • While this port is at L level, capstan motor turns at double normal speed. Set to H level only while except high-speed dubbing and transition of mechanism. H : Normal, L : Double speed
12	70NSP (PD6)	O	• Port for changing normal playback equalizer. • Turned on while chromium tape is played normally. Default is OFF and bias of 120μs is applied. H : ON (70μs), L : OFF (120μs)
13	70HSP (PD7)	O	• Port for changing double-speed playback equalizer. • Turned on while chromium tape is played at double-speed. Default is OFF and bias of 120μs is applied. H : ON (70μs), L : OFF (120μs)
14~17	(PC0~PC3)	I	• Unused terminals.
18	PHA (PC4)	I	• Photo-sensor input port of A-mechanism. • Light is applied to reflector at rear of reel stand. H/L is judged by reflected light to sense running of tape and use result for counter. • Running of tape is sensed at both edges. Counter counts one every four senses.
19	PHB (PC5)	I	• Photo-sensor input port of B-mechanism. • Light is applied to reflector at rear of reel stand. H/L is judged by reflected light to sense running of tape and use result for counter. • Running of tape is sensed at both edges. Counter counts one every four senses.
20	REC MUTE (PC6)	O	• Mute just before REC EQ. • Turned off only during REC operation. H : OFF, L : ON
21	LINE MUTE (PC7)	O	• Mute at LINE OUT of playback system. • Turned off only during playback and recording operation, including transition time of mechanism. H : OFF, L : ON
22~25	KR0~KR3	I	• Key return port for test mode. • Key is taken through this port to realize test mode with key of body.
26~29	KS0~KS3	O	• Key scan port for test mode. • Key is taken through this port to realize test mode with key of body. • TSCN3 composes short matrix of test mode.
30	RST (RST)	I	Reset terminal of device.
31	EXTAL (EXTAL)	I	• Terminal for oscillation of device. • 10 MHz is connected.
32	XTAL (XTAL)	O	• Terminal for oscillation of device. • 10 MHz is connected.
33	VSS (VSS)	–	• Grounding terminal.
34	TX (TX)	O	• Terminal for sub-oscillation of device. • Unused.
35	TEX (TEX)	I	• Terminal for sub-oscillation of device. • Unused
36	AVGND (AVGND)	–	• Terminal for ground level of A/D conversion. • Generally, potential of VSS is input.
37	AVREF (AVREF)	–	• Terminal for upper level of A/D conversion. • Generally, potential of VDD is input.
38	LEVEL L (PA0)	I	• Port for detection of L-channel signal level of tape. • A/D conversion is performed to detect level.
39	LEVEL R (PA1)	I	• Port for detection of R-channel signal level of tape.• A/D conversion is performed to detect level.
40	E²PROM DT (PA2)	I/O	• Port for reading and writing data of E²PROM. • All data which deck must save are written in this IC.

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Function
41	E²PROM CLK (PA3)	O	• Port for supplying clock for E²PROM.
42	BIAS (PA4)	O	• Port for turning on/off bias for REC operation. • Turn on only during REC operation. H : ON, L : OFF
43	READ (PA5)	O	• Port for turning on/off addition capacitive load for removing ripples from signal when level is read in automatic adjustment or ATCS operation. • Normally turned off. H : ON, L : OFF
44	400/12.5kHz (PA6)	O	• Port for changing filter for automatic adjustment. • Filter is changed according to OSC output. H : 12.5 kHz, L : 400 kHz
45, 46	(PA7, PB0)	I	• Unused terminal.
47	SRQ2 (PB1)	O	• Stand-by port for communication with receiver and request for and receiving data from deck. • Micro-controller of deck set this port to H level to request for release of bus from master (micro-controller of receiver) when sending data. • When receiving, micro-controller of deck notifies receiver that it is ready to receive data. H : Request, Ready, L : In communication, bus released
48	MCK (PB2)	I	• Terminal for communication with receiver and input of outside clock. • Deck sends and receives data according to clock output by receiver. • Used as SERIAL COMMUNICATION BUSY terminal when started in unit mode.
49	MDT (PB3)	I	• Terminal for communication with receiver and input of master data. • Data for deck are input through this terminal. • Used as SERIAL COMMUNICATION DATA terminal when started in unit mode.
50	SDT (PB4)	O	• Terminal for communication with receiver and output of slave data. • Data from deck are output through this terminal, synchronized with MCK clock.
51	SYSCK (PB5)	O	• Clock port for control of system IC.
52	SYSST (PB6)	O	• Strobe port for control of system IC.
53	SYSDT (PB7)	O	• Data port for control of system IC.
54	(PE0)	I	• Unused terminal.
55	PLAY A (PE1)	I	• SW to detect A-mechanism head position. • This port is tested at every point of transition of mechanism. For example, if head is lifted up at last of playback, this port is set to L level. H : Head DOWN, L : Head UP
56	HALF A (PE2)	I	• SW to detect tape in A-mechanism. • Tape in mechanism is judged by condition of this port. H : Tape is not mounted, L : Tape is mounted
57	CRO2 A (PE3)	I	• SW to detect chromium tape position of A-mechanism. • Chromium tape position is recognized at H level. H : Chromium tape position, L : Normal position
58	(PE4)	O	• Unused terminal.
59	OSC OUT (PE5)	O	• Output terminal of oscillator for automatic adjustment. • 400 Hz and 12.5 kHz are output.
60	(PI0)	–	• Terminal to detect chip enable. • Port to detect turning off of power. H : Power is turned on, L : Power is turned off.
61	MRQ2 (PI1)	I	• Stand-by port for communication with receiver and request for and receiving data from master. • Micro-controller of deck confirms that this port is set to H level before starting transmission, and recognizes transmission from master when this port is set to H under normal condition. This detection is made at interruption level. H : Request, Ready, in communication, L : Bus released
62	UD752 (PI2)	I	• Pulled up when used in mode of UD-752. H : UD-752 mode, L : UD-502/562 mode
63~67	(PI3~PI7)	I	• Unused terminal.
68	METAL B (PG0)	I	• SW to detect metal tape position of B-mechanism. • Detects only in UD-752 mode. • Recognize metal tape position at H level. H : Metal tape position, L : Normal or chromium tape position
69	PLAY B (PG1)	I	• SW to detect B-mechanism head position. • This port is tested at every point of transition of mechanism. For example, if head is lifted up at last of playback, this port is set to L level. H : Head DOWN, L : Head UP
70	HALF B (PG2)	I	• SW to detect tape in B-mechanism. • Tape in mechanism is judged by condition of this port. H : Tape is not mounted, L : Tape is mounted
71	CRO2 B (PG3)	I	• SW to detect chromium tape position of B-mechanism. • Chromium tape position or metal tape position is recognized at H level. H : Chromium tape or metal tape position, L : Normal position
72	VDD (VDD)	–	• Power supply terminal for device.
73	NC (NC)	–	• Empty terminal. Connected to Vdd.
74	INF F (PG4)	I	• SW to inhibit recording on A-side of B-mechanism. • Set to L level when recording on A-side of B-mechanism is inhibited. H : Recording is permitted, L : Recording is inhibited

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Function
75	INF R (PG5)	I	• SW to inhibit recording on B-side of B-mechanism. • Set to L level when recording on B-side of B-mechanism is inhibited. H : Recording is permitted, L : Recording is inhibited
76	Nor/ABIAS (PG6)	O	• Port to change level in automatic adjustment. • Level is changed for playback mode adjustment and recording/playback mode adjustment. H : Recording/Playback adjustment, L : Playback adjustment
77	(PG7)	I	• Unused terminal.
78	INPUT MUTE (PF0)	O	• Mute at inlet of REC system. • Turned off when REC operation starts. Kept turned on in other conditions. H : OFF, L : ON
79	A/B (PF1)	O	• Port to select A-mechanism or B-mechanism. • Since two mechanisms are installed while only one circuit is installed, one is selected with this port. H : B-mechanism, L : A-mechanism
80	R/P (PF2)	O	• Port to select head route. • Used to select playback head or recording head. H : Recording, L : Playback

2-3. Pin explanation

• Features

(a) Reverse-type, double deck (A- and B-decks).
(b) B-deck can record.
(c) CCRS and CRLS functions.
(d) DPSS skip search function (16 stations maximum).
(e) Dolby B, C
(f) Dubbing function (Normal speed, high speed)
(g) 3-mode direction (One-way, U, endless)
(h) Matched to long play and one-touch editing functions
(i) Two tape positions (Normal, chromium)

• Controlled items

(1) Cassette mechanism
Playback mechanism (D40-1363-*5)
Recording mechanism (D40-1364-*5)

(2) System IC : HA12167F

(3) E^2PROM : X24C01AP

CIRCUIT DESCRIPTION

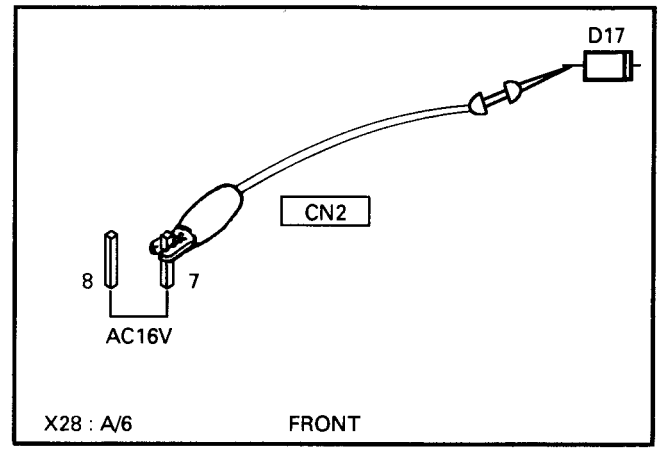
3. Test mode (Cassette deck)

3-1. Initial setting

The deck is set initially under the following conditions.

Power	: ON
Mechanical mode	: Stop
Direction	: Both A and B are set forward.
Right to operate	: B
CCRS/CRLS	: OFF
Operation mode	: U mode
DOLBY NR	: OFF
Input	: Tuner
REC level	: Initial value
Playback equalizer	: 120NSP
All mute	: ON
Erasing head	: OFF
R/P	: Play
A/B	: A
Reel LED	: ON

When turning on the power for the Cassette deck independently, be sure to connect AC16V (No. 7 or 8) and D17 (ANODE) of (X28)(A/6). (Remove this connection after the power is turned on.)



3-2. Types of test mode

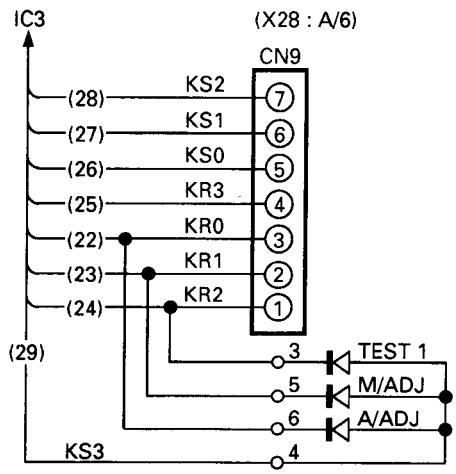
(1) Test 1
(2) Manual adjustment
(3) Automatic adjustment

3-3. Setting of test mode

The machine is set in the test mode under the following port conditions when it is reset.

KS3	KR3	KR2	KR1	KR0
AUTO ADJ	0	0	0	1
MANU ADJ	0	0	1	0
TEST1	0	1	0	0
INITIAL SET	0	1	1	0
DON'T CARE	Other matters			

(See remarks.) 0 : Open, 1 : Short



CIRCUIT DESCRIPTION

3-4. TEST 1

• Setting

· System (A-E5+X-E5) :
Shorting the No. 4 pin to the No. 3 pin by a diode (Direction: No. 4 →|← No. 3), press the [POWER] key of the receiver (A-E5).

· Unit (X-E5) :
Shorting the No. 4 pin to the No. 3 pin by a diode (Direction: No. 4 →|← No. 3), turn on the [POWER] switch of the power supply jig.

• Resetting

· System (A-E5+X-E5) :
Press the [CCRS/CRLS] key or POWER key to turn off the power.

· Unit (X-E5) :
Turn off the POWER switch of the power supply jig or short No. 1 of CN9 to No. 7.

• Contents and operation

	Contents	System	* Unit
1	4-sec REC	[REC] key	4, 5 pin
2	13-sec REC	[SKIP UP] key (⏭)	4, 6 pin
3	A/B FWD normal speed playback	[REW] key (◀◀)	1, 6 pin
4	A/B FWD double speed playback	[FF] key (▶▶)	2, 6 pin
5	A/B RVS normal speed playback	[SKIP DOWN] key (⏮)	3, 6 pin
6	CCRS level test	[NOR DUBB] key	3, 7 pin
7	Electronic volume 3-level control	[HI DUBB] key	4, 7 pin

*Short pins of CN9 for the independent operation of unit.

• Allotment of keys

	KS0 <5 pin>	KS1 <6 pin>	KS2 <7 pin>
KR0 <3 pin>	STOP	RVS normal speed playback (⏮)	CCRS TEST (N/DUBB)
KR1 <2 pin>	TAPE	FWD Double speed playback (▶▶)	DOLBY
KR2 <1 pin>	A/B	FWD normal speed playback (◀◀)	Reset →Normal (CCRS/CRLS)
KR3 <4 pin>	4-sec REC (REC)	13-sec REC (⏭)	Electronic volume control (H/DUBB)

< > : CN9 (X28 : A/6), ( ) : Keys of receiver used in normal mode

When performing this operation, press the keys of the receiver having the names of the above keys used in the normal mode.

For example, since the [NOR DUBB] key is used as the key for the CCRS test in the normal mode, the [NOR DUBB] key of the receiver is used for this purpose.

• Indication

· Items indicated with LED
These items are indicated with LED in either the system or the unit mode.

The LED on the L side of the A-deck indicates the tape type of the half in the A-deck, and the R side indicates the tape type of the half in the B-deck as follows.

Turned off : Normal tape
Turned on : Chromium tape

The LED of the B-deck indicates the condition of the dolby.

	B REEL LED	
	L SIDE	R SIDE
DOLBY OFF	○	○
DOLBY B	●	○
DOLBY C	○	●

(Remarks) ○ : Turned off., ● : Turned on.

CIRCUIT DESCRIPTION

Specifications

The machine is set in the test mode, regardless of the positions of the switches and mounting of tapes. Even if the head is lifted up, the following operation is executed after initial setting.

- **Initial setting**
  The REC level is set to the initial level (–15dB) by the center.

- **4-sec REC**
  If the [REC] key is pressed, the deck records for 4 seconds, then automatically rewinds to the starting point of recording and plays back.
  The REC key is accepted infinitely.
  If the [REC] key is pressed again during 4-sec REC operation, the machine records for 4 seconds again from the current point, then rewinds to the starting point of the first 4-sec REC and plays back.
  If a tape is selected, the following operation starts.

①When normal tape is used
- The machine performs the 4-sec REC with the dolby turned off, then rewinds to the starting point of recording and plays back.
- The machine plays back with the dolby turned off.

②When chromium tape is used
- The machine performs the 4-sec REC with the dolby C turned on, then rewinds to the starting point of recording and plays back.
- The machine plays back with the dolby turned off.

③When metal tape is used
- The machine performs the 4-sec REC with the dolby B turned on, then rewinds to the starting point of recording and plays back.
  The machine plays back with the dolby turned off.

After playing for 4 seconds, the machine continues playing under the current dolby condition. If the [STOP] key is pressed, the operation is stopped and the dolby is turned off.

- **13-sec REC**
  If the [SKIP UP] key is pressed, the deck records for 13 seconds, then automatically rewinds to the starting point of recording and plays back.
  The [SKIP UP] key is accepted infinitely.
  If the [REC] key is pressed again during 13-sec REC operation, the machine records for 13 seconds again from the current point, then rewinds to the starting point of the first 13-sec REC and plays back.
  The details of the operation are the same as the 4-sec REC.

- **PLAY for adjustment of tape speed (Common to A- and B-mechanism)**
  If the [FF] key is pressed, the machine performs high-speed FWD playback.
  If the [REW] key is pressed, the machine performs normal-speed FWD playback.
  If the two keys are pressed alternately while the machine is playing, the head is not lowered, but only the speed is changed.
  If the [SKIP DOWN] key is pressed, the machine performs normal-speed RVS playback.

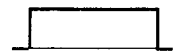
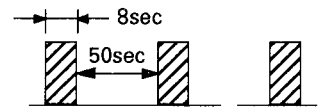
- **Cyclic change of electronic volume**
  If the [HI DUBB] key is pressed, the volume is changed ($-\infty \rightarrow$ -15 dB $\rightarrow$ 0 dB)

- **NOR-CCRS (Confirmation of lowering of REC volume level)**
  If the [NOR DUBB] key is pressed, recording is paused. If an excessive input is received, the recording level is lowered.

ADJUSTMENT

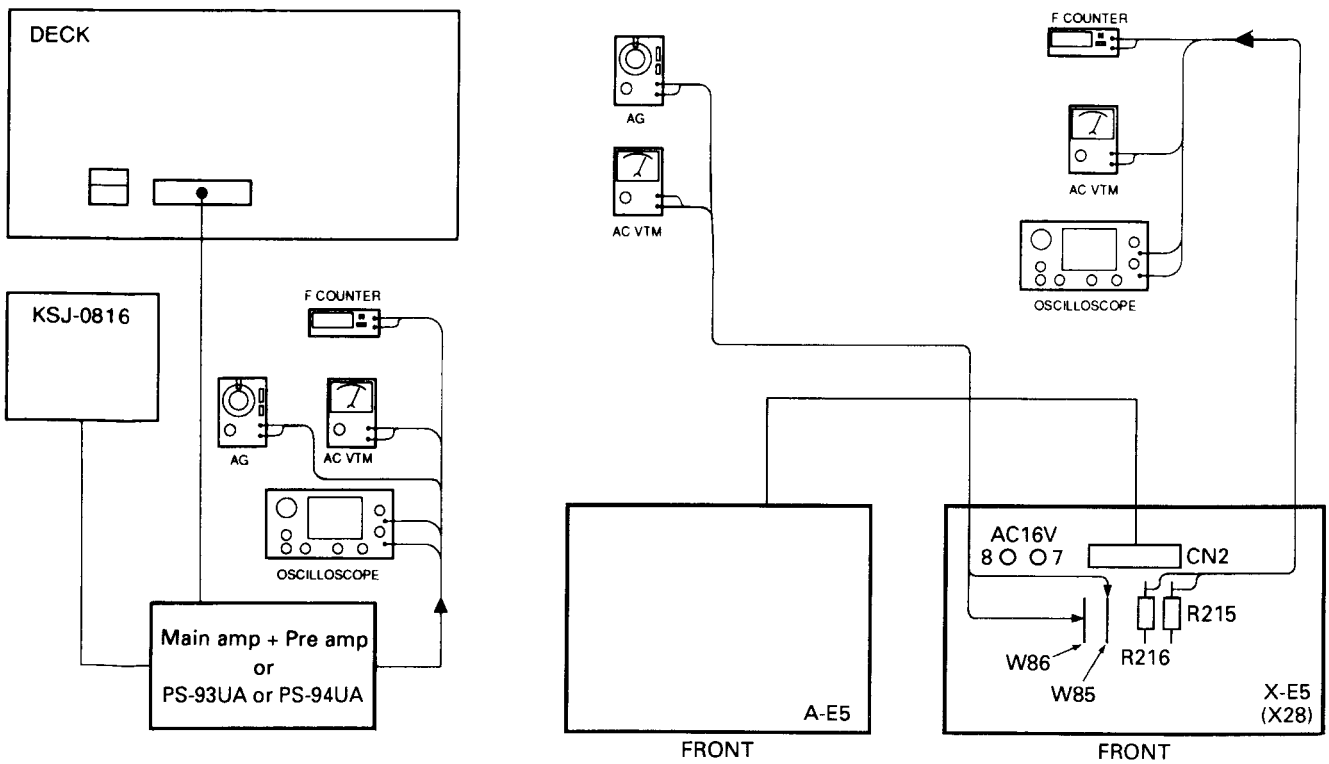
Preparation for adjustment

1. Supply the power of AC14~16V from the main amplifier or the jig.
2. When performing automatic adjustment, prepare a dolby level tape (TCC-130 or MTT-150) and a tape conformed to SCC-2280.

DOLBY LEVEL CALIBRATION	TCC-130 MTT-150	DOLBY B-TYPE TONE 200nWb/m	DOLBY B-TYPE TONE 
DOLBY LEVEL + Alignment	SCC-2280	DOLBY B-TYPE TONE 200nWb/m	

3. If a synchronism check jig is available, connect it. (KSJ-0816)

Connection diagram



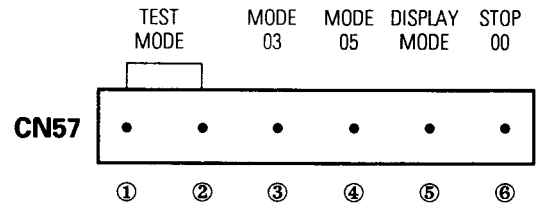
ADJUSTMENT

Adjustment (CD player)

Test mode

Pin No. (CN57)	Key name	Function	Display
1, 2	TEST PIN	TEST MODE SET	00
1, 3	CHECK	FOCUS SERVO ON TRACKING SERVO OFF FEED SERVO OFF	03
1, 4	PLAY	FOCUS SERVO ON TRACKING SERVO ON FEED SERVO ON	05
1, 5	UP	Cyclic indication of all-light-up mode/all-go-off mode of LF display.	
1, 6	STOP	FOCUS SERVO OFF TRACKING SERVO OFF FEED SERVO OFF	00

Setting of test mode : CN57 (X28 : C/6) Set above mode.

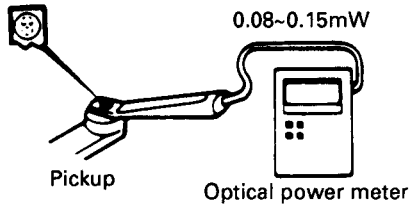


EX. Setting of test mode : Shorting the No. 1 pin to the No. 2 pin
Setting of all-light-up mode : Shorting the No. 1 pin to the No. 5 pin

NO.	ITEM	INPUT SETTING	OUTPUT SETTING	PLAYER SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	LASER POWER	–	Apply the sensor section of the optical power meter on the pickup lens.	Short 1 pin and 2 pin of CN57 and enter the test mode. Short 1 pin and 3 pin of CN57. The LD emets light. Then, confirm that the display is "03"	–	On the power from 0.08 to 0.15mW, when the diffraction grating is correctly a ligned with the RF level of 1.5Vp-p or more and the TE (servo open) level of 1.5Vp-p or more, the pickup is acceptable.	(a)
2	FOCUS GAIN	Test disc type 4 Apply signal of 1.0kHz, 0.1Vrms to CN56 Pin 2, 3 (X28 : C/6)	Connect a LPF to CN56 pin 2, 3 to which connect an oscilloscope or two AC voltmeters. (X28 : C/6)	Short 1 pin and 4 pin of CN57. Confirm that the display is "05". (X28 : C/6)	FOCUS GAIN VR51 (X28 : C/6)	Two VTVMs should read the same value.	(b)
3	TRACKING GAIN	Test disc type 4 Apply signal of 1.0kHz, 0.1Vrms to CN56 Pin 5, 6 (X28 : C/6)	Connect a LPF to CN56 pin 5, 6 to which connect an oscilloscope or two AC voltmeters. (X28 : C/6)	Short 1 pin and 4 pin of CN57. Confirm that the display is "05". (X28 : C/6)	TRACKING GAIN VR52 (X28 : C/6)	Two VTVMs should read the same value.	(c)

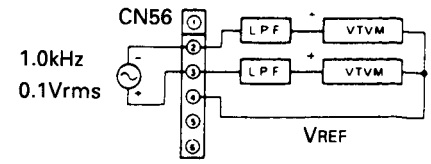
(NOTE) Type 4 disc : SONY YEDS-18 TEST DISC or equivalent.
LPF : Around 47kΩ+390pF or so.

(a) Laser power

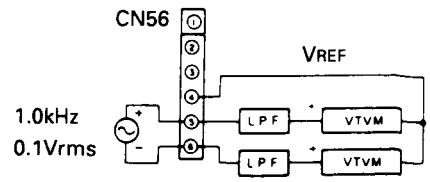


(b) Focus gain, (c) Tracking gain

Focus gain :



Tracking gain :



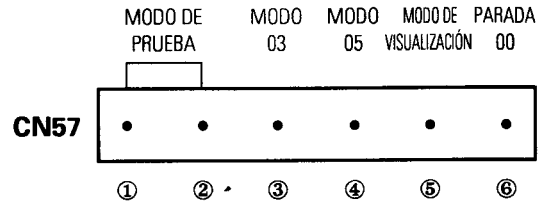
ADJUSTES

Adjustes (Reproductor de discoa compactos)

Modo de prueba

Núm.de patilla (CN57)	Nombre la de la tecla	Función	Visualización
1, 2	PATILLA DE PRUEBA	AJUSTE DEL MODE DE PRUEBA	00
1, 3	COMPRO-BACIÓN	SERVO DE ENFOQUE ACTIVADO SERVO DE ALINEACIÓN DESACTIVADO SERVO DE ALIMENTACIÓN DESACTIVADO	03
1, 4	REPRO-DUCCIÓN	SERVO DE ENFOQUE ACTIVADO SERVO DE ALINEACIÓN ACTIVADO SERVO DE ALIMENTACIÓN ACTIVADO	05
1, 5	HACIA ARRIBA	Indicación cíclica en modo de iluminación completa/apagado completo del visualixzador LF.	
1, 6	PARADA	SERVO DE ENFOQUE DESACTIVADO SERVO DE ALINEACIÓN DESACTIVADO SERVO DE ALIMENTACIÓN DESACTIVADO	00

Ajuste del modo de prueba : CN57(X28 : C/6) ajuste al modo de arriba.

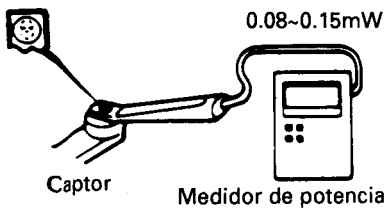


EJ. Ajuste del modo de prueba : Cortocircuite las patillas 1 y 2.
Ajuste del modo de iluminación completa : Cortocircuite las patillas 1 y 5.

N.0	ITEM	AJUSTE DE ENTRADA	AJUSTE DE SALIDA	AJUSTE DEL REPRODUCTOR	PUNTO DE ALINEACIÓN	ALINEACIÓN PARA	FIG.
1	POTENCIA DE LÁSER	–	Aplique la sección del sensor del medidor de potencia óptica al ojetivo captor.	Cortocircuite el n.o 1 y el n.o 2 del CN57 y entre en el modo de prueba. Cortocircuite el n.o 1 y el n.o3 del CN57. El diode láser emitirá luz. Despues, confirme si se ha visualizado "03".	–	Con una potencia de 0.08 a 0.15 mW, cuando la red difractora esté correctamente alineada con el nivel de RP de 1.5Vp-p o más y el nivel de TE (servo abierto) de 1.5Vp-p o más, el captor podrá aceptarse como normal.	(a)
2	GANANCIA DE ENFOQUE	Disco de prueba tipo 4 Aplique una señal de 1.0kHz, 0.1V eficaces a las patillass 2 y 3 del CN56 (X28 : C/6)	Conecte un LPF (filtro de paso bajo) a las patillas 2 y 3 del CN56, a las que esté conectado el osiloscopio o dos voltímetros de CA (X28 : C/6)	Cortocircuite el n.o 1 y el n.o 4 del CN57. Confirme si se visualiza "05". (X28 : C/6)	GANANCIA DE ENFOQUE VR51 (X28 : C/6)	Los dos VTVM deberán indicar el mismo valor	(b)
3	GANANCIA DE ALINEACIÓN	Disco de prueba tipo 4 Aplique una señal de 1.0kHz, 0.1V eficaces a las patillass 5 y 6 del CN56 (X28 : C/6)	Conecte un LPF (filtro de paso bajo) a las patillas 5 y 6 del CN56, a las que esté conectado el osiloscopio o dos voltímetros de CA (X28 : C/6)	Cortocircuite el n.o 1 y el n.o 4 del CN57. Confirme si se visualiza "05". (X28 : C/6)	GANANCIA DE ALINEACIÓN VR52 (X28 : C/6)	Los dos VTVM deberán indicar el mismo valor	(c)

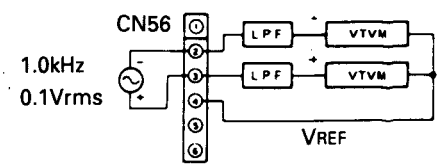
(NOTA) Disco de tipo 4 : SONY YEDS-18 TEST DISC o equivalente.
LPF : Unos 47kΩ+390pF más o menos

(a) Potencia de láser

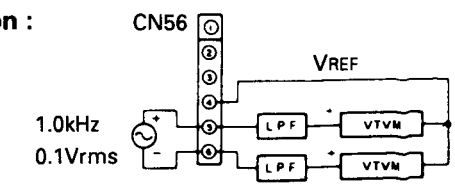


(b) Ganacia de enfoque, (c) Ganacia de alineacin

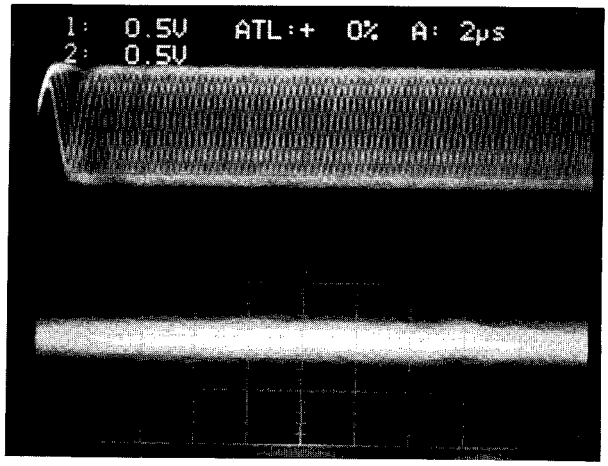
Ganacia de enfoque :



Ganacia de alineación :



ADJUSTMENT



CH1
RF signal

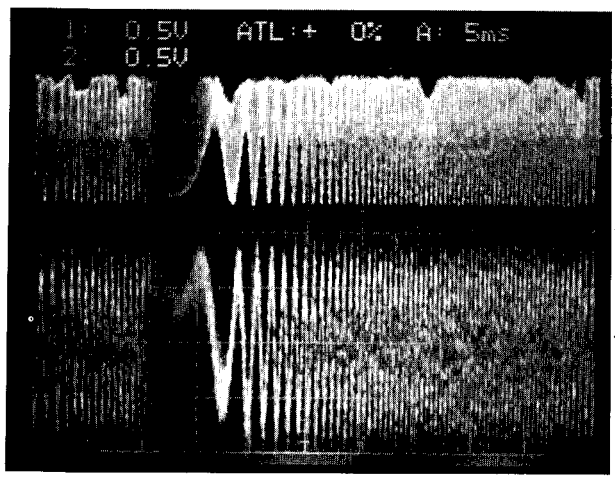
← VC (2.5V)

← VC (2.5V)

CH2
TE siganl

16µs

- RF signal and E.Spot signal in test mode (PLAY).
- If the diffraction grating has been adjusted properly, the influence of triggering is observed on the E.Spot waveform of appox. 16µs after RF signal, in the form of a projection.



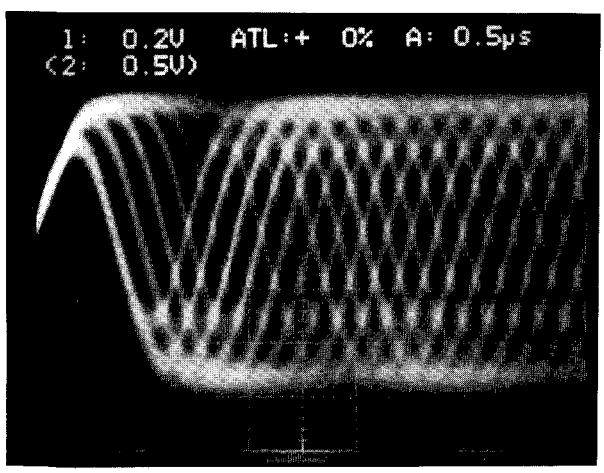
CH1
RF signal

← VC (2.5V)

← VC (2.5V)

CH2
TE signal

- RF signal and T.Error signal; in test mode (Focusing ON). (Disc type 4)

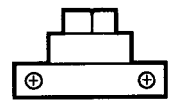


RF signal

- RF signal in test mode (PLAY).

ADJUSTMENT

Preparation for adjustment (Cassette deck)

NO.	ITEM	INPUT SETTING	OUTPUT SETTING	CASSETTE TAPE DECK SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG.
Unless otherwise specified, set the respective switches as follows : **TAPE : NORMAL DOLBY : OFF**						**0dBs=0.775V**	
I. Cassette mechanism unit (Adjustment of the REC/PLAY head)							
[1]	DEMAGNETIZATION AND CLEANING	–	–	Power : OFF Demagnetization, cleaning, PLAY UNIT (X-E5) Short 2 pin and 5 pin of CN9. STOP : Short 3 pin and 5 pin of CN9.	Recording head, erase head, capstan,pinch roller	Demagnetize the REC/PLAY head with the head eraser. Clean the REC/PLAY head, erase head, capstan and pinch roller using a cotton swab slightly damped with alcohol.	
[2]	AZIMUTH OF THE REC/PLAY HEAD	SCC-1727 TCC-153 MTT-114 10kHz, –10dB	–	PLAY UNIT (X-E5) Short 2 pin and 5 pin of CN9. STOP : Short 3 pin and 5 pin of CN9.	 FWD RVS	Adjust the output to maximum and adjust the azimuth adjustment screw for the Lissajous waveform pattern of the oscilloscope to become close to a 45° straight line.	
II. PC board adjustment (Note) Carry out the double speed adjustment in the first place.							
<1>	TAPE SPEED (HIGH SPEED)	TCC-110 MTT-111 SCC-1727 3kHz	–	* (1) TEST 1 MODE (2) SYNCRO TEST MODE	VR2 (A) VR4 (B)	Adjust the tape speed so that 6kHz is obtained at the center of the tape.	
<2>	TAPE SPEED (NORMAL)				VR1 (A) VR3 (B)	Adjust the tape speed so that 3kHz is obtained at the center of the tape.	

* Before turning on the power for the unit (X-E5) independently in the TEST 1 mode or SYNCHRO TEST mode, make the following connection.
Connect AC16V (No. 7 or 8) and D17 (ANODE) of (X28)(A/6).

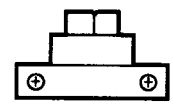
1. TEST 1

- System (A-E5+X-E5) :
  Shorting the No. 4 pin to the No. 3 pin by a diode (Direction : No. 4 →|– No. 3), press the POWER key of the receiver (A-E5).
  Press the FF key during FWD playback→HI SPEED
  Press the REW key during HI SPEED playback→NORMAL
- Unit (X-E5) :
  Shorting the No. 4 pin to the No. 3 pin by a diode (Direction : No. →|– No. 3), turn on the POWER switch of the power supply jig.
  HI SPEED : Short No. 2 and No. 6 pins of CN9 to each other.
  NOR SPEED : Short No. 1 and No. 6 pins of CN9 to each other.
  STOP : Short No. 3 and No. 5 pins of CN9 to each other.

2. Synchronization test mode (KSJ-0816)

(1)	Enter	E040H→Synchronization test ON state.	
(2)	A Deck : FWD PLAY	E010H	
(3)	A Deck : HI-SPEED	E018H	VR2 6kHz
(4)	A Deck : NORMAL	E017H	VR1 3kHz
(5)	A Deck : STOP	E014H	
(6)	B Deck : NORMAL	E020H	
(7)	B Deck : HI SPEED	E028H	VR4 6kHz
(8)	B Deck : NORMAL	E027H	VR3 3kHz
(9)	B Deck : STOP	E024H	
(10)	DECK SYNCHRO TEST OFF	E041H	

ADJUSTES

Núm.	ÍTEM	AJUSTES DE ENTRADA	AJUSTES DE SALIDA	AJUSTES DEL DECK DE CASETES	PUNTOS DE ALINEACIÓN	ALINEACION PARA	FIG.
A menos que se especifique lo contrario, el ajuste de los controles respectivos es el siguiente:							**0dBs=0.775V**
CINTA: NORMAL, DOLBY: DESACTIVADO							
I. UNIDAD DEL MECANISMO DEL CASETE		**(Adjuste de la cabeza grabadora/reproductora [REC/PLAY] .)**					
[1]	DESMAGNETIZACIÓN Y LIMPIEZA	–	–	ALIMENTACIÓN : DESCONECTADA Limpieza, Desmagnetización, Reproducción Modo de unidad (X-E5) Cortocircuite el n.o 5 y el n.o 2 del CN9. Parada : Cortocircuite el n.o 3 y el n.o 5 del CN9.	Cabeza grabadora Cabeza borradora Eje de arrastre Rodillo compresor	Desmagnetice la cabeza Grabadora/Reproductora con el borradora de cabezas. Limpie la cabeza Grabadora/ Reproductora, cabeza borradora, eje de arrastre, y rodillo compresor utilizando un palillo de cabeza de algodón Ligeramente humedecido en alcohol.	
[2]	ACIMUT DE LA CABEZA GRABADORA/ REPRODUCTORA	SCC-1727 TCC-153 MTT-114 10kHz, –10dB	–	REPRODUCCIÓN Modo de unidad (X-E5) Cortocircuite el n.o 5 y el n.o 2 del CN9. Parada : Cortocircuite el n.o 3 y el n.o 5 del CN9.	 FWD RVS	Ajuste la salida al nivel máximo, y gire el tornillo de ajuste del acimut hasta que el patrón de forma de onda de lissajous del osciloscopio se acerque a una línea recta de 45°.	
II. Ajuste de la tarjeta de circuito impreso		**Nota : Realice en primer lugar el ajuste de velocidad doble.**					
<1>	VELOCIDAD DE LA CINTA (ALTA VELOCIDAD)	TCC-110 MTT-111 SCC-1727 3kHz	–	* (1) Modo 1 de prueba (2) Mode de prueba de sincronización	VR2 (A) VR4 (B)	Ajuste la velocidad de la cinta de forma que la señal de 6kHz se produzca en el centro de la cinta.	
<2>	VELOCIDAD DE LA CINTA (NORMAL)				VR1 (A) VR3 (B)	Ajuste la velocidad de la cinta de forma que la señal de 3kHz se produzca en el centro de la cinta.	

* Antes de conectar la alimentació de la unidad (X-E5), independientemente del modo de prueba (TEST 1) o del modo de prueba sincronizada (SYNCHRO TEST), realice la conexión siguiente.
Conecte AC16V (núm. 7 u 8) y D17 (ÁNODE) de (X28 : A/6).

1. Prueba (TEST 1)

- Sistema (A-E5+X-E5) :
  Cortocircuite las patillas n.o 4 y n.o 3 con un diode (Séntido : N.o 4 →|– N.o 3), y presione el botón POWER del receptor (A-E5).
  Presione el botón FF durante la reproducción progresiva (FWD)→Alta velocidad (HI SPEED)
  Presione el botón REW durante la reproducción a alta voelocidad (HI SPEED)→Reproducción normal (NORMAL)
- Unidad (X-E5) :
  Cortocircuite las patillas n.o 4 y n.o 3 con un diode (Sentido : N.o 4 →|– N.o 3), y ponga en ON el interruptor POWER de la fuente de alimentación.
  HI SPEED (alta velocidad) : Cortocircuite las patillas n.o 2 y n.o 6 del CN9.
  NOR SPEED (velocidad normal) : Cortocircuite las patillas n.o 1 y n.o 6 del CN9.
  STOP (parada) : Cortocircuite las patillas n.o 3 y n.o 5 del CN9.

2. Modo de prueba de sincronización (KSJ-0816)

(1)	Introduzca	E040H→Estado de prueba de sincronización	
(2)	Deck-A : Reproducción progresiva	E010H	
(3)	Deck-A : Velocidad alta	E018H	VR1 6kHz
(4)	Deck-A : Normal	E017H	VR3 3kHz
(5)	Deck-A : Parada	E014H	
(6)	Deck-B : Normal	E020H	
(7)	Deck-B : Velocidad alta	E028H	VR2 6kHz
(8)	Deck-B : Normal	E027H	VR4 3kHz
(9)	Deck-B : Parada	E024H	
(10)	Desactivación del modo de prueba de sincronización del deck	E041H	

ADJUSTMENT

Manual adjustment : Unit (X-E5)

● Lit (ON) X (OFF)

	STEPS OF PROCEDURE	OPERATION	CN9 (X28) SETTING (Shorted)	A REEL LED		B REEL LED	
				L SIDE	R SIDE	L SIDE	R SIDE
1	Turn the power OFF.						
2	Short circuit TP4 ⟶|⟵ TP5 with diode, and then turn the power ON.			●	X	●	X
3	Enter TCC-130 in DECK A and playback.	FWD	Pin 2 and 5				
4	DECK A Lch level adjustment. Adjust the output level to –1dBs. (TCC-130/MTT-150 (200nwb/m) –1dBs (690mV); MTT-256U (250nwb/m) 0dBs; MTT-256 (160nwb/m) –4dBs.) *When using 160nwb/m or 250nwb/m tape, adjust to –4dB and 0dB respectively.	UP : DOWN :	Pin 4 and 6 Pin 3 and 6				
5	Change of adjustment items. DECK A Rch level adjustment. Adjust the output level to –1dBs.	UP/DOWN :	Pin 2 and 7 Same as No. 4 Pin 3 and 5	●	X	X	●
6	Enter TCC-130 in DECK B and change of adjustment items. DECK B Lch level adjustment. Adjust the output level to –1dBs.	PLAYBACK : UP/DOWN :	Pin 2 and 7 Pin 2 and 5 Same as No. 4	X	●	●	X
7	Change of adjustment items. DECK B Rch level adjustment. Adjust the output level to –1dBs.	UP/DOWN : STOP :	Pin 2 and 7 Same as No. 4 Pin 3 and 5	X	●	X	●
	As the PLAY/REC select IC is on the PLAY side even during recording in the manual adjustment mode, the play back or recordingmonitor is output from the deck. Due to this connect AG output to JIG (PS-93UA or PS-94UA). – REC adjustment –						
8	Load the tape to recorded in the DECK B (TCC-106A). Change of adjustment items. Lch REC level adjustment. Start the recording, and adjust AG for the output to become –10dBs. Play the recorded tape back, and make sure that the 1kHz output is –10dBs. Adjust the output to –10dBs.	REC STOP : REW : FF : FWD : UP : DOWN :	Pin 2 and 7 Pin 4 and 5 Pin 3 and 5 Pin 1 and 6 Pin 2 and 6 Pin 2 and 5 Pin 4 and 6 Pin 3 and 6	●	●	●	X
9	Change of adjustment items. Rch REC level adjustment. Adjust AG to obtain –10dBs. Play the recorded tape back, verify whether the output is –10dBs, and make the required adjustment.	REC THROUGH DOWN	Pin 2 and 7 Same as No.8	●	●	X	●
10	Change of adjustment items. Lch BIAS adjustment (Adjust AG for the output to become –20dBs). Record 1kHz/10kHz alternately. Make the required adjustment for the playback outputs of 1kHz/10kHz to become the same.	REC THROUGH DOWN	Pin 2 and 7 Same as No.8	X	X	●	X
11	Change of adjustment items. Rch recording BIAS adjustment. Record 1kHz/10kHz alternately, and carry out the required adjustment for the playback outputs to become the same.	REC THROUGH DOWN	Pin 2 and 7 Same as No.8	X	X	X	●
12	Send data to the E²PROM.		Pin 4 and 7				
13	*Reset the adjustment mode by turning the power OFF.		Pin 1 and 7				

*If the pin No. 1 and No.7 of CN9 are shorted to each other, TEST 1 is selected.

ADJUSTMENT

Manual adjustment : System (A-E5 + X-E5)

● Lit (ON) X (OFF)

	STEPS OF PROCEDURE	A REEL LED		B REEL LED	
		L SIDE	R SIDE	L SIDE	R SIDE
1	Turn the power OFF.				
2	Short circuit TP4 —▶|— TP5 with diode, and then turn the power ON.	●	X	●	X
3	Enter TCC-130 in DECK A and PLAY.				
4	DECK A Lch level adjustment. Same as in the case of P.B SKIP DOWN ⏮ (DOWN) SKIP UP ⏭ (UP) Adjust the output level to –1dBs by [SKIP UP/DOWN] key. TCC-130 200nwb/m –1dBs (690mV) 250nwb/m 0dBs 160nwb/m –4dBs *When using 160nwb/m or 250nwb/m tape, adjust to –4dB and 0dB respectively.				
5	Push the [DOLBY NR] key. Adjust the DECK A Rch level.	●	X	X	●
6	Push the [DOLBY NR] key. Enter TCC-130 in DECK B, and PLAY. Adjust the DECK B Lch level.	X	●	●	X
7	Push the [DOLBY NR] key. Adjust the DECK B Rch level.	X	●	X	●
	As the PLAY/REC select IC is on the PLAY side even during recording in the manual adjustment mode, the playback or recording monitor is output from the deck. Due to this, connect W85 and W86 of the AG output and input the recording. –REC adjustment–				
8	Push the [DOLBY NR] key. Lch REC level adjustment. Load the tape to be recorded in the DECK B (TCC-106A). Connect AG (1kHz) with W85. Push the [REC] key to start the recording, and adjust AG for the output to become –10dBs. Play the recorded tape back, and make sure that the 1kHz output is –10dBs. SKIP DOWN ⏮ (DOWN) SKIP UP ⏭ (UP) Adjust the output to –10dBs by means of the [UP/DOWN] key. (Each stop corresponds to a change of approximately 0.2dBs.)	●	●	●	X
9	Push the [DOLBY NR] key. Rch REC level adjustment. Connect AG (1kHz) with W86. Push the [REC] key, and adjust AG to obtain –10dBs. Play the recorded tape back, verify whether the output is –10dBs, and make the required adjustments.	●	●	X	●
10	Push the [DOLBY NR] key. Lch BIAS adjustment. Connect AG (–20dBs) with W85 and record 1kHz/10kHz alternately. Make the required adjustment with the [SKIP UP/DOWN] key for the playback outputs of 1kHz/10kHz to become the same.	X	X	●	X
11	Push the [DOLBY NR] key. Rch recording BIAS adjustment. Connect AG with W86, record 1kHz/10kHz alternately, and carry out the required adjustment with the [SKIP UP/DOWN] key for the playback outputs to become the same.	X	X	X	●
12	Push the [HIGH DUBB] key. (Send data to the E^2PROM).				
13	*Reset the adjustment mode by turning the power OFF or push [CCRS/CRLS] key.				

*If the [CCRS/CRLS] key is pressed, TEST 1 is selected.

ADJUSTMENT

PB level, REC level adjustment : Unit (X-E5), System (A-E5+X-E5)

• In the case of automatic adjustment (Self adjustment)

● Lit (ON) ○ FLICKERING X (OFF)

	STEPS OF PROCEDURE	ADJUSTMENT RESULT	LED INDICATION STATE				DISPLAY
			A REEL LED		B REEL LED		(System
			L SIDE	R SIDE	L SIDE	R SIDE	only)
1	Turn the power OFF.	Under adjustment	X	X	X	X	TAPE
2	Enter TCC-130 in DECK A and DECK B.	PB CALB Lch ERROR	○	X	○	○	PCLL
3	Short circuit TP4 —▶|— TP6 with diode and turn the power ON. (The operation starts automatically.)	PB CALB Rch ERROR	X	○	○	○	PCLR
		A PB Lch ERROR	○	X	○	X	APBL
4	DECK A playback level adjustment.	A PB Rch ERROR	○	X	X	○	APBR
5	DECK B playback level adjustment.	B PB Lch ERROR	X	○	○	X	BPBL
6	Turn the power OFF.	B PB Rch ERROR	X	○	X	○	BPBR
7	Enter TCC-106A in DECK B.	REC CALB Lch ERROR	○	X	X	X	RCLL
8	Short circuit TP4 —▶|— TP6 with diode and turn the power ON. (The operation starts automatically.)	REC CALB Rch ERROR	X	○	X	X	RCLR
		B REC Lch ERROR	○	○	○	X	BRCL
9	Recording level adjustment.	B REC Rch ERROR	○	○	X	○	BRCR
10	Recording bias adjustment.	B BIAS Lch ERROR	X	X	○	X	BBSL
11 *	The adjustment is finished when the 4 light emitting diodes (LED) of REEL are lit. The operation mode returns to normal when the power is turned OFF or when the CCRS/CRLS key is pushed. (System) Turn the power OFF or short pin 1 and pin 7 of CN9. (Unit)	B BIAS Rch ERROR	X	X	X	○	BBSR
		PB ALL OK	●	●	X	X	PB
		REC ALL OK	X	X	●	●	REC
		ALL OK	●	●	●	●	ALL

When starting the self-adjustment of the unit (X-E5).
Connect AC16V (No.7 or No.8) and D17 (ANODE) of (X28 : A/6).

*If the[CCRS/CRLS] key is pressed or No.1 and No. 7 of CN9 are shorted to each other, TEST 1 is selected.

ADJUSTMENT

Manual adjustment mode

Adjustable items and adjusting procedure

- **Manually adjustable items**
- Playback level of A-deck (L, R)
- Playback level of B-deck (L, R)
- Recording equalizer of B-deck (L, R)
- Recording bias of B-deck (L, R)

- **Contents and procedure of adjustment**

(1) Adjustment of playback level of Lch of A-deck
(2) Adjustment of playback level of Rch of A-deck
(3) Adjustment of playback level of Lch of B-deck
(4) Adjustment of playback level of Rch of B-deck
(5) Adjustment of recording level of Lch of B-deck
(6) Adjustment of recording level of Rch of B-deck
(7) Adjustment of recording bias of Lch of B-deck
(8) Adjustment of recording bias of Rch of B-deck

Allotment of keys

	KS0 <5 pin>	KS1 <6 pin>	KS2 <7 pin>
KR0 <3 pin>	STOP	Lowering of adjustment value (⏮)	Deletion of each adjustment item (N/DUBB)
KR1 <2 pin>	TAPE	FF	Change of adjustment item (DOLBY)
KR2 <1 pin>	A/B	RWD	Resetting 'TEST 1 (CCRS/CRLS)
KR3 <4 pin>	REC	Upper of adjustment (⏭)	Saving of all adjustment items (H/DUBB)

< > : CN9 (X28 : A/6)
( ) : Keys of receiver used in normal mode

When performing this operation, press the keys of the receiver having the names of the above keys used in the normal mode.

For example, since the [dolby] key is used as the key for change of adjustment item in the normal mode, the [DOLBY] key of the receiver is used for this purpose.

Since data cannot be output in series for the adjustment in the system mode, the adjustment value is indicated by the counter of the receiver. Set the selector of the receiver to TAPE at this time, however.

* In the unit mode, short the pins of CN9.
(Examples) :
- For change of an adjustment item, short No. 2 and No. 7 of CN9 to each other.
- For heightening of an adjustment value, short No. 4 and No. 6 of CN9 to each other.
- For lowering of an adjustment value, short No. 3 and No. 6 of CN9 to each other.

ADJUSTMENT

Operation

- If the power is turned on with the test pin jumper shorted, the A PB Lch data are set.
  At this time, the value currently written in the E²PROM is read as each adjustment data. The adjustment OK/ERR condition is also read (only when the normal data are written).
  Besides, all the adjustment finish conditions are turned off and all the backup check data are broken.
  If the adjustment data for an item is not written, the center value is read.

- Select an item to be adjusted with the [DOLBY] key, and heighten or lower the adjustment value with the [SKIP UP/SKIP DOWN] keys.
  If in the unit mode, the adjustment value of the currently adjusted item is output in series.
  If in the system mode, the adjustment value of the currently adjusted item is indicated.

Explanation of keys

- [N/DUBB] key : Deletion of each adjustment item
  Used to initialize only the adjustment value of the currently adjusted item.
  A, B PB value→30
  B REC EQ value→15
  B BIAS value→40

* Unit mode : Short No. 3 and No. 7 of CN9 to each other.

- [H/DUBB] key : Writing of all adjustment items
  Used to transfer all the currently adjusted data to the E²PROM write in it, so that they can be backed up.
  Also used to complete the adjustment in each mode and back it up.
  If this key is pressed during the manual adjustment, when the machine is turned on in the normal mode or test mode next time, the adjustment data are read out of the E²PROM.

* Unit mode : Short No. 4 and No. 7 of CN9 to each other.
After the adjustment, if the manual adjustment is reset without pressing this key, when the machine is turned on in the normal mode or test mode next time, the initial values are read since the backup check data have not been written.

- [DOLBY] key : Cyclic change of adjustment item
  Used to change the currently adjusted item cyclically.

* Unit mode : Short No. 2 and No. 7 of CN9 to each other.

→[A PB Lch]→[A PB Rch]→[B PB Lch]→[B PB Rch]→
↑ ↓
←[B BIAS Rch]←[B BIAS Lch]←[B REC Rch]←[B REC Lch]←

- [SKIP UP/DOWN] key : Heightening and lowering of adjustment value
  Used to heighten and lower the adjustment value of the currently adjusted item.
  UP :
  (Example : 63 step →···→ 15 step →···→ 0 step)
  DOWN :
  (Example : 0 step →···→ 15 step →···→ 63 step)
  Each time the value is changed, the adjustment data conformed to the current operation of the mechanism are transferred to the system IC, then the serial code is output or indicated.
  Adjustment range
  PB : 0~63 step
  REC EQ : 0~31 step
  BIAS : 20~60 step

* Unit mode
UP : Short No. 4 and No. 6 of CN9 to each other.
DOWN : Short No. 3 and No. 6 of CN9 to each other.

- [CCRS] key
  Used to reset the manual adjustment mode.

* Unit mode : Short No. 1 and No. 7 of CN9 to each other.

- Other keys
  Used for the ordinary operation.

ADJUSTMENT

Automatic adjustment mode of playback system

• Self-adjustment items

- Correction of sensitivity of playback meter amplifier (L, R)
- Adjustment of playback level of A-deck (L, R)
- Adjustment of playback level of B-deck (L, R)

• Contents and procedure of adjustment

(1) Correction of sensitivity of meter for adjustment of playback (L, R) : Initial setting
(2) Adjustment of playback level of L/Rch of A-deck
Writing of adjustment data of playback of A-deck (When playback of A-deck is finished normally)
(3) Adjustment of playback level of L/Rch of B-deck
Writing of adjustment data of playback of B-deck (When playback of B-deck is finished normally)

• Setting

- System (A-E5+X-E5) :
Shorting the test pin of (X28) (TP4 —▶|— TP6) by a diode, press the POWER key of the receiver (A-E5).
- Unit (X-E5) :
Shorting the test pin of (X28) (TP4 —▶|— TP6) by a diode, press the POWER switch of the power supply jig.

• Resetting

System (A-E5+X-E5) :
Press the [CCRS/CRLS] key or POWER key to turn off the power.
- Unit (X-E5) :
Turn off the POWER switch of the power supply jig or short No. 1 and No. 7 of CN9 (X28).

* If the [CCRS/CRLS] key is pressed or No. 1 and No. 7 of CN9 (X28) are shorted to each other, TEST 1 is selected.

Starting condition

Adjustment of playback of A/B-deck
If the A-deck or B-deck has half, the A-deck or B-deck adjustment mode is accepted.
Either or both decks having halves are adjusted in the order of A and B.
Only the deck(s) and only the channel(s) which has (have) not been adjusted is(are) adjusted at this time.
Normally, if playback of a channel is adjusted, the REC EQ/BIAS are set again in the unadjusted condition.
If the playback modes of both A- and B-decks have been adjusted, the adjustment is finished without adjusting anything.
If either deck does not have half, adjustment is judged to be ERR and finished.

• Key matrix

	KS0 <5 pin>	KS1 <6 pin>	KS2 <7 pin>
KR0 <3 pin>	–	–	–
KR1 <2 pin>	–	–	DOLBY
KR2 <1 pin>	A/B	–	Resetting →TEST 1
KR3 <4 pin>	–	–	–

< > : CN9 (X28 : A/6)

When performing this operation, press the keys of the receiver having the names of the above keys used in the normal mode.
For example, since the [CCRS/CRLS] key is used as the key for resetting in the normal mode, the [CCRS/SRLS] key of the receiver is used for this purpose.
Since data cannot be output in series for the adjustment in the system mode, the adjustment value is indicated by the counter of the receiver. Set the selector of the receiver to TAPE at this time, however.

Automatic adjustment mode of recording system

• Self-adjustment items

- Correction of sensitivity of recording meter amplifier (L, R)
- Adjustment of recording level of B-deck (L, R)
- Adjustment of recording bias of B-deck (L, R)

• Contents and procedure of adjustment

(1) Correction of sensitivity of meter for adjustment of recording (L, R) : Initial setting
(2) Adjustment of recording level of L/Rch of B-deck
Writing of adjustment data of recording equalizer of B-deck (When recording of B-deck is finished normally)
(3) Adjustment of recording bias of L/Rch of B-deck
Writing of adjustment data of bias of B-deck (When recording of B-deck is finished normally)
(4) Writing of finish data (When all items are finished normally)

• Setting

System (A-E5+X-E5) :
Shorting the test pin of (X28) (TP4 —▶|— TP6) by a diode, press the POWER key of the receiver (A-E5).
Unit (X-E5) :
Shorting the test pin of (X28) (TP4 —▶|— TP6) by a diode, press the POWER switch of the power supply jig.

ADJUSTMENT

- **Resetting**
  - System (A-E5+X-E5) :
    Press the [CCRS/CRLS] key or POWER key to turn off the power.
  - Unit (X-E5) :
    Turn off the POWER switch of the power supply jig or short No. 1 and No. 7 of (X28).

* If the [CCRS/CRLS] key is pressed or No. 1 and No. 7 of CN9 (X28) are shorted to each other, TEST 1 is selected.

- **Starting condition**

Adjustment of playback/recording
If the B-deck has half, the adjustment mode is accepted.
If the recording equalizer has been adjusted, only the bias is adjusted. Only the channel(s) which has(have) not been adjusted is(are) adjusted.
Normally, if the recording equalizer is adjusted, the bias is set in the unadjusted condition.
If both recording equalizer and bias have been adjusted, the adjustment is finished without adjusting anything.
If the B-deck does not have half or its playback has not been adjusted, adjustment is judged to be ERR and finished.

- **Writing after all adjustments are finished**
  - Writing of adjustment OK/ERR and outputting of serial data.

After all the adjustments are finished, the operation is stopped and the normal finish is indicated.
The data of the normal finish of the self-adjustment is written in the E2PROM, then the serial code for normal finish (E080H) is output every three seconds.

If the adjustment is finished abnormally, the adjustment item having an error is indicated similarly to the above.
The data of the abnormal finish of the self-adjustment and the position where the adjustment stopped are written in the E2PROM, then the serial code of abnormally finished item (E09xH) is output every three seconds.

- **Serial code at automatic adjustment**

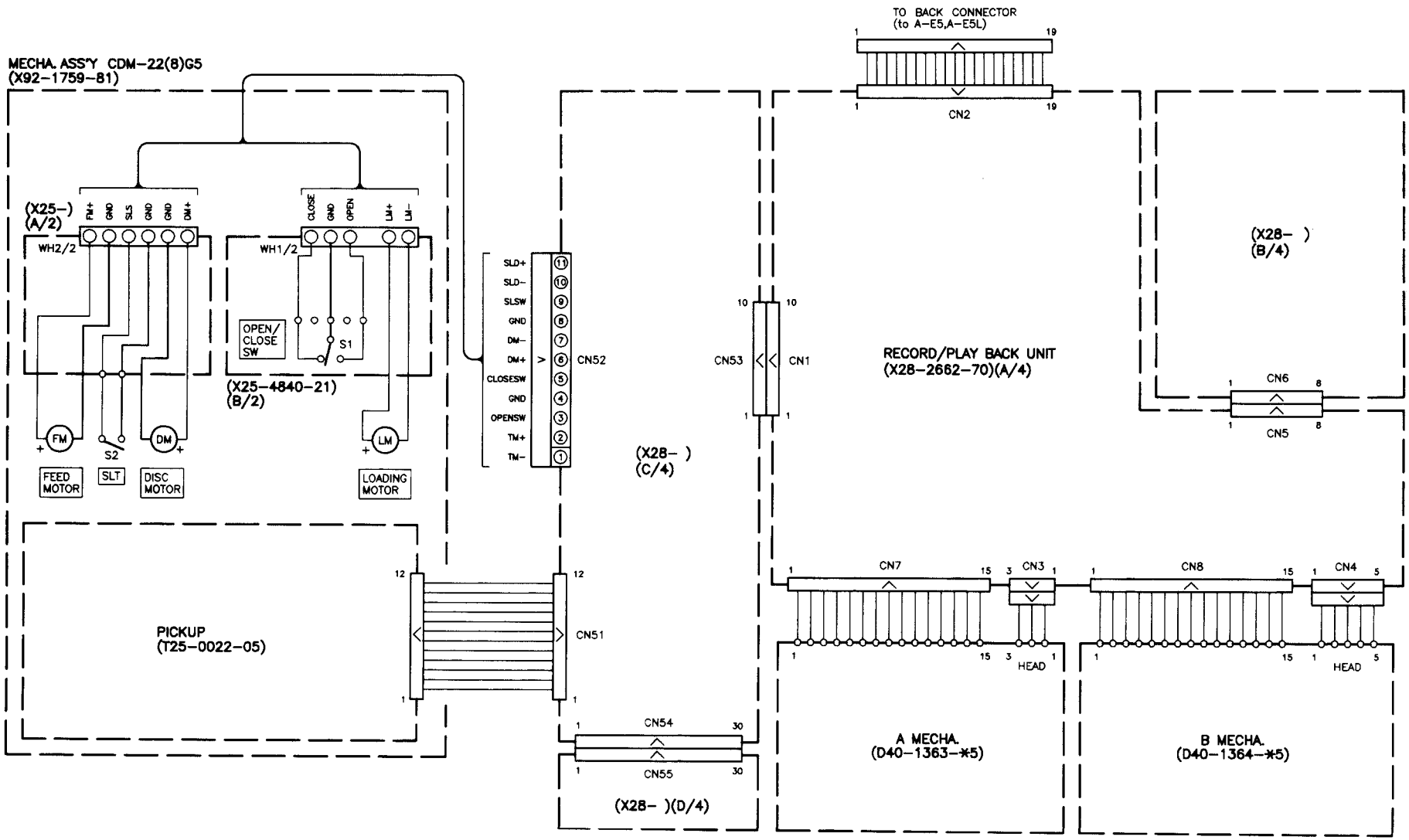
This serial code does not have meaning unless the serial jig is connected. It is output, however, in either system mode or unit mode.

When OK	E080H
A PB Lch ERR	E091H
A PB Rch ERR	E092H
B PB Lch ERR	E097H
B PB Rch ERR	E098H
B REC EQ Lch ERR	E099H
B REC EQ Rch ERR	E09AH
B BIAS Lch ERR	E09BH
B BIAS Rch ERR	E09CH
Correction of sensitivity Lch ERR	E09DH
Correction of sensitivity Rch ERR	E09EH
Adjustment has not been performed yet.	E09FH

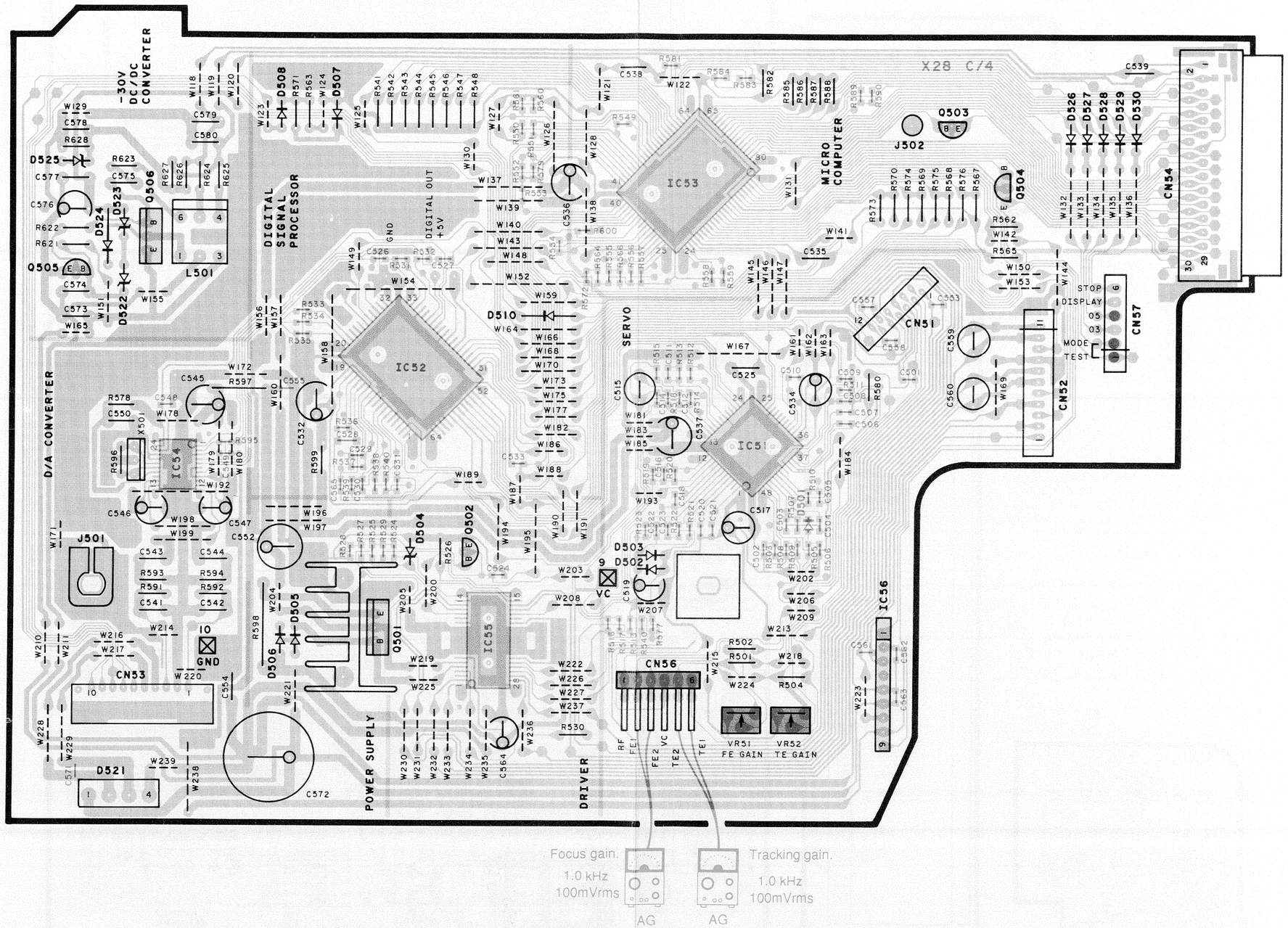
Interruption of adjustment (STOP key, etc.)

X-E5

WIRING DIAGRAM

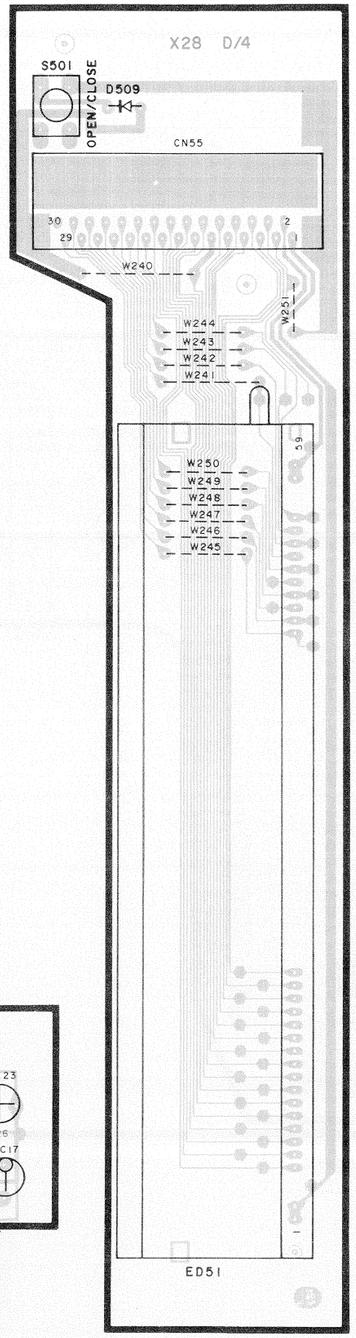


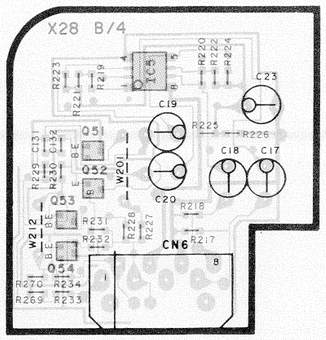
PC BOARD (COMPONENT SIDE VIEW)

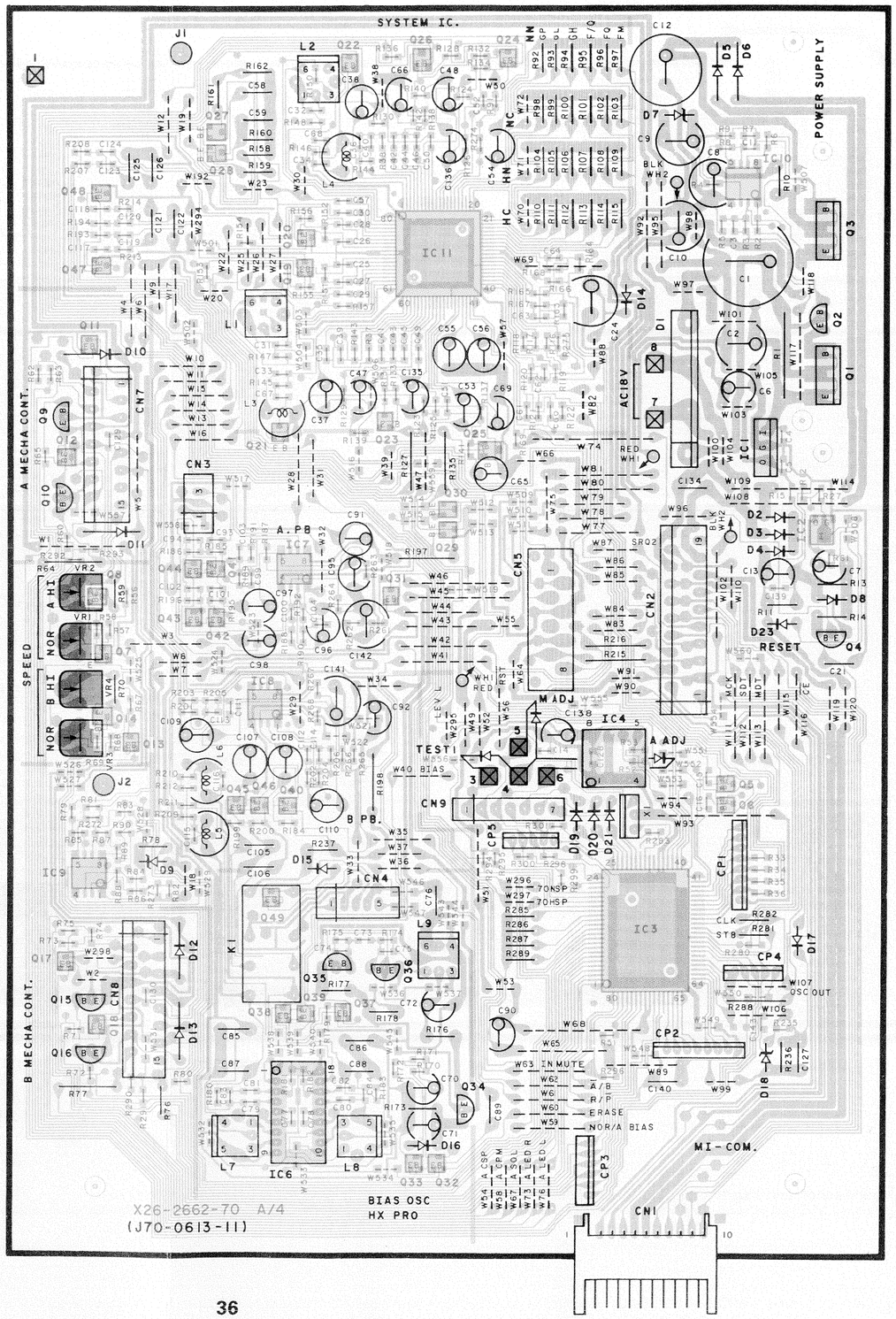


Refer to the schematic diagram for the values of resistors and capacitors.

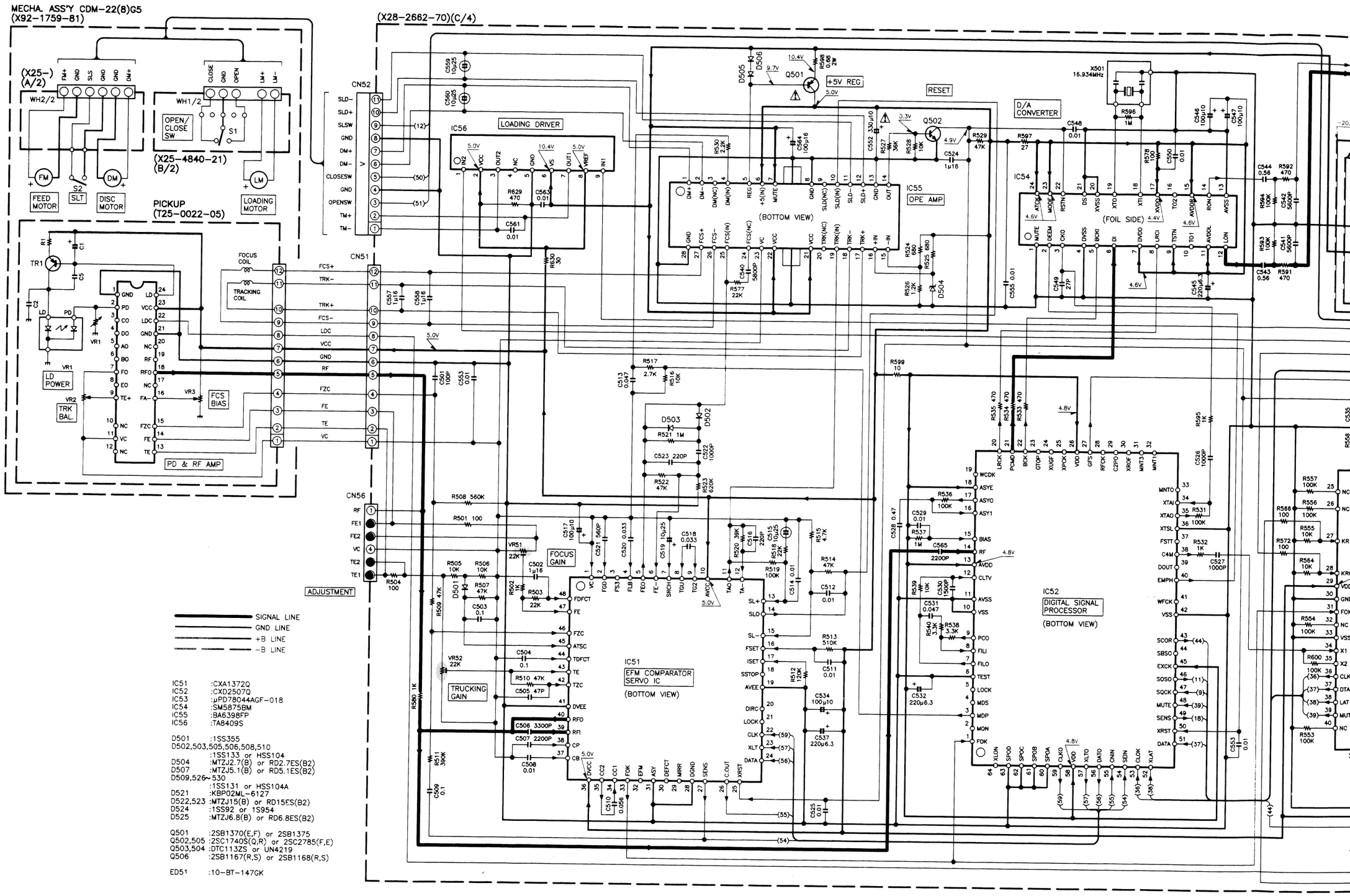
PC BOARD (COMPONENT SIDE VIEW)

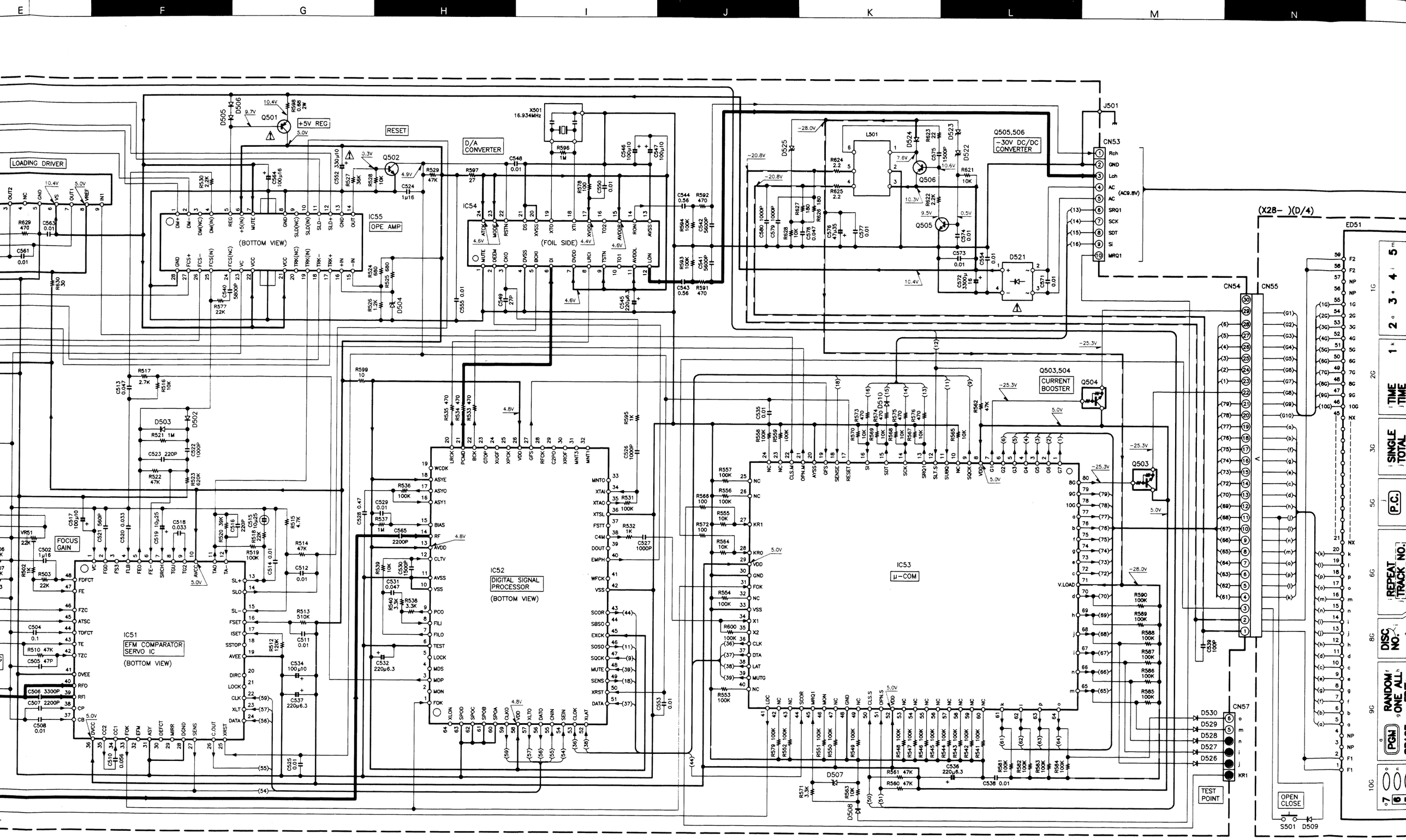


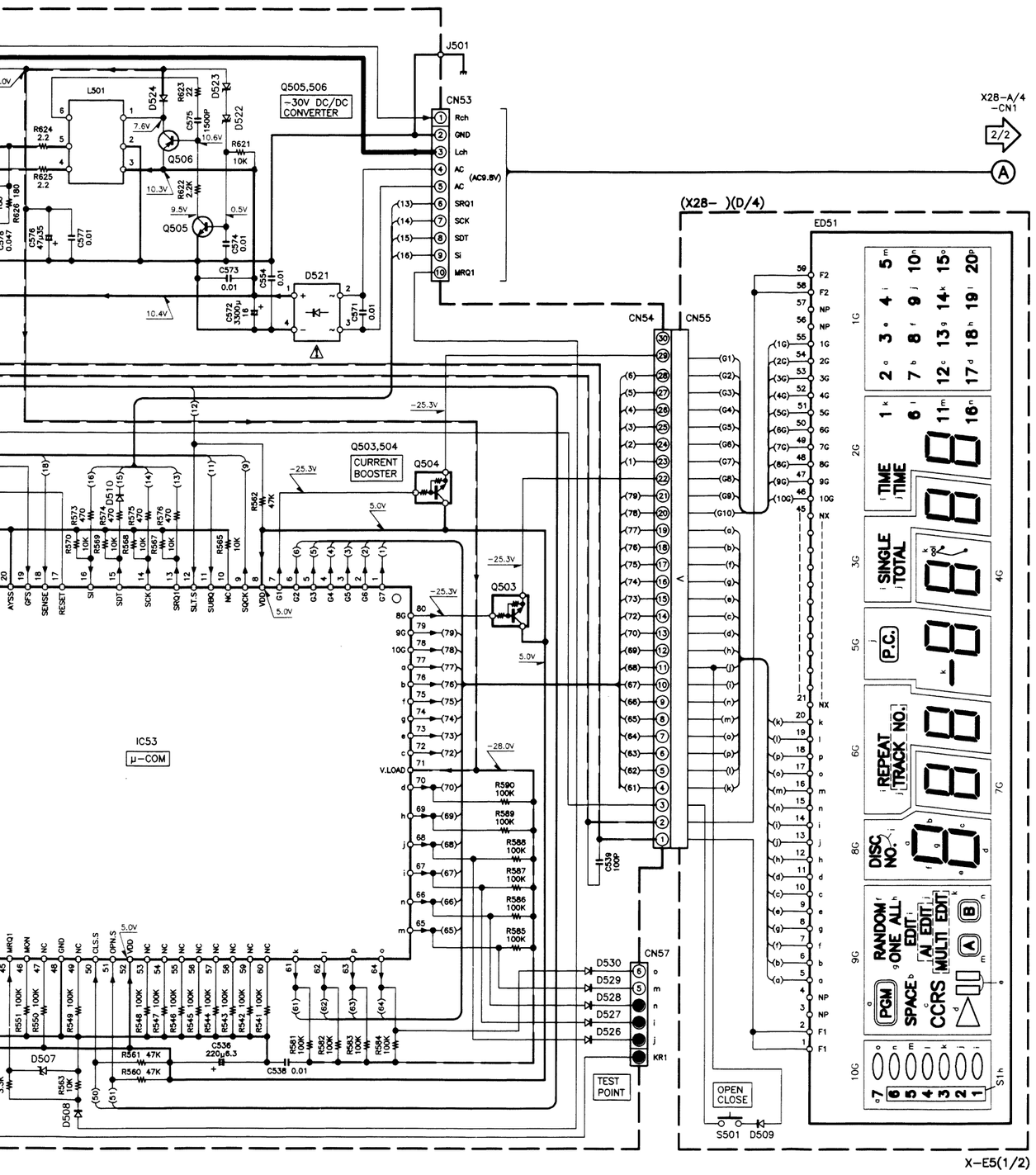




Refer to the schematic diagram for the values of resistors and capacitors.

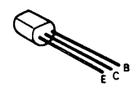

MECHA. ASS'Y CDM-22(8)G5
(X92-1759-81)
(X25-)
(A/2)
WH2/2
FM+ GND SLS GND GND DM+
WH1/2
CLOSE GND OPEN LM+ LM-
OPEN/
CLOSE
SW
S1
(X25-4840-21)
(B/2)
FM
DM
LM
FEED
MOTOR
SLT
S2
DISC
MOTOR
LOADING
MOTOR
PICKUP
(T25-0022-05)
TR1
R1
C1
C5
C2
LD
PD
VR1
LD
POWER
VR2
TRK
BAL.
VR3
FCS
BIAS
GND
PD
CO
DO
AO
BO
FO
EO
TE+
NC
VC
NC
LD
VCC
LDC
GND
NC
RF
RFO
NC
FA-
FZC
FE
TE
PD & RF AMP
FOCUS
COIL
TRACKING
COIL
CN52
SLD-
SLD+
SLSW
GND
DM+
DM-
CLOSESW
GND
OPENSW
TM+
TM-
CN51
FCS+
TRK-
TRK+
FCS-
LDC
VCC
GND
RF
FZC
FE
TE
VC
CN56
RF
FE1
FE2
VC
TE2
TE1
ADJUSTMENT
(X28-2662-70)(C/4)
IC56
LOADING DRIVER
IN2
VCC
OUT2
NC
GND
VS
OUT1
VREF
IN1
R629 470
C563 0.01
C561 0.01
R630 30
D505
D506
Q501
+5V REG
R598 0.68 2W
RESET
Q502
R529 47K
C524 1µ16
IC55
OPE AMP
(BOTTOM VIEW)
D504
D/A
CONVERTER
X501
16.934MHz
R595 1M
IC54
(FOIL SIDE)
R597 27
C548 0.01
C548 100µ10
C547 100µ10
C544 0.56
R592 470
R594 100K
C542 5600P
R593 100K
C541 5600P
C543 0.56
R591 470
C555 0.01
C549 27P
C545 220µ6.3
R599 10
R517 2.7K
R516 10K
C513 0.047
D503
D502
R521 1M
C523 220P
C522 1000P
R522 47K
R523 620K
R508 560K
R501 100
R504 100
R505 10K
R506 10K
R507 47K
R509 47K
D501
C503 0.1
VR51 22K
C502 1µ16
R502
R503 22K
VR52 22K
TRUCKING
GAIN
R510 47K
C505 47P
C506 3300P
C507 2200P
C508 0.01
R511 390K
C509 0.1
R580 1K
FOCUS
GAIN
C517 100µ10
C521 560P
C520 0.033
C519 10µ25
C518 0.033
R520 39K
C516 220P
C515 0.33
R518 22K
C514 0.01
R519 100K
R514 47K
C512 0.01
R515 4.7K
IC51
EFM COMPARATOR
SERVO IC
(BOTTOM VIEW)
R513 510K
C511 0.01
R512 120K
C534 100µ10
C537 220µ6.3
C510 0.056
C525 0.01
IC52
DIGITAL SIGNAL
PROCESSOR
(BOTTOM VIEW)
C528 0.47
R537 1M
R536 100K
C529 0.01
C565 2200P
R539 10K
C530 1500P
C531 0.047
R540 3.3K
R538 3.3K
C532 220µ6.3
R535 470
R534 470
R533 470
R595 1K
C526 1000P
C535
C553 0.01
R557 100K
R556 100K
R566 100
R555 10K
R572 100
R564 10K
R554 100K
R600 100K
R553 100K
SIGNAL LINE
GND LINE
+B LINE
-B LINE
IC51 :CXA1372Q
IC52,53 :CXD2507Q
IC53 :µPD78044AGF-018
IC54 :SM5875BM
IC55 :BA6398FP
IC56 :TA8409S
D501 :1SS355
D502,503,505,506,508,510
:1SS133 or HSS104
D504 :MTZJ2.7(B) or RD2.7ES(B2)
D507 :MTZJ5.1(B) or RD5.1ES(B2)
D509,526~530
:1SS131 or HSS104A
D521 :KBP02ML-6127
D522,523 :MTZJ15(B) or RD15ES(B2)
D524 :1SS92 or 1S954
D525 :MTZJ6.8(B) or RD6.8ES(B2)
Q501 :2SB1370(E,F) or 2SB1375
Q502,505 :2SC1740S(Q,R) or 2SC2785(F,E)
Q503,504 :DTC113ZS or UN4219
Q506 :2SB1167(R,S) or 2SB1168(R,S)
ED51 :10-BT-147GK


LOADING DRIVER
+5V REG
RESET
D/A CONVERTER
Q505,506
-30V DC/DC CONVERTER
CURRENT BOOSTER
IC55
OPE AMP
(BOTTOM VIEW)
IC54
(FOIL SIDE)
IC51
EFM COMPARATOR SERVO IC
(BOTTOM VIEW)
IC52
DIGITAL SIGNAL PROCESSOR
(BOTTOM VIEW)
IC53
μ-COM
FOCUS GAIN
TEST POINT
OPEN CLOSE
S501
D509
(X28-)(D/4)
ED51
CN53
CN54
CN55
CN57
J501
X501 16.934MHz
Q501
Q502
Q503
Q504
Q505
Q506
L501
D521
D522
D523
D524
D525
D526
D527
D528
D529
D530
D502
D503
D504
D505
D506
D507
D508
SINGLE TOTAL TIME
REPEAT TRACK NO.
DISC NO.
RANDOM ONE ALL
P.C.
PGM

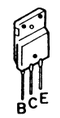


X-E5(1/2)

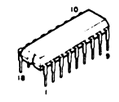
2SC3246
2SC3940A



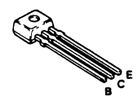
2SB1375
2SD2012



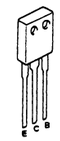
UPC1297CA



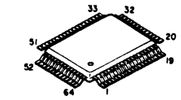
2SC2785



2SB1167
2SB1168



CXD2507Q



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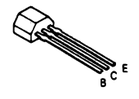
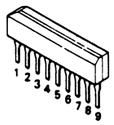
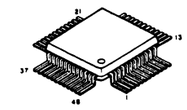


TA8409S

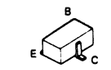


CXA1372Q

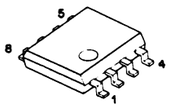


DTA124EU
2SA1576
2SD1757K

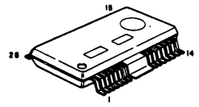
DTC124EU
2SC4081



NJM4558M
NJM4565MD



BA6398FP



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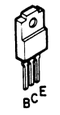
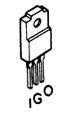
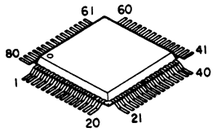
2SD2061



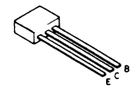
BA17805T
UPC7805AHF



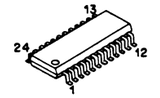
HA12167FB



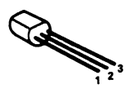
UN4219



SM5875BM



S-80740AL-A4



- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

A MECHA. (D40-1363-*5)

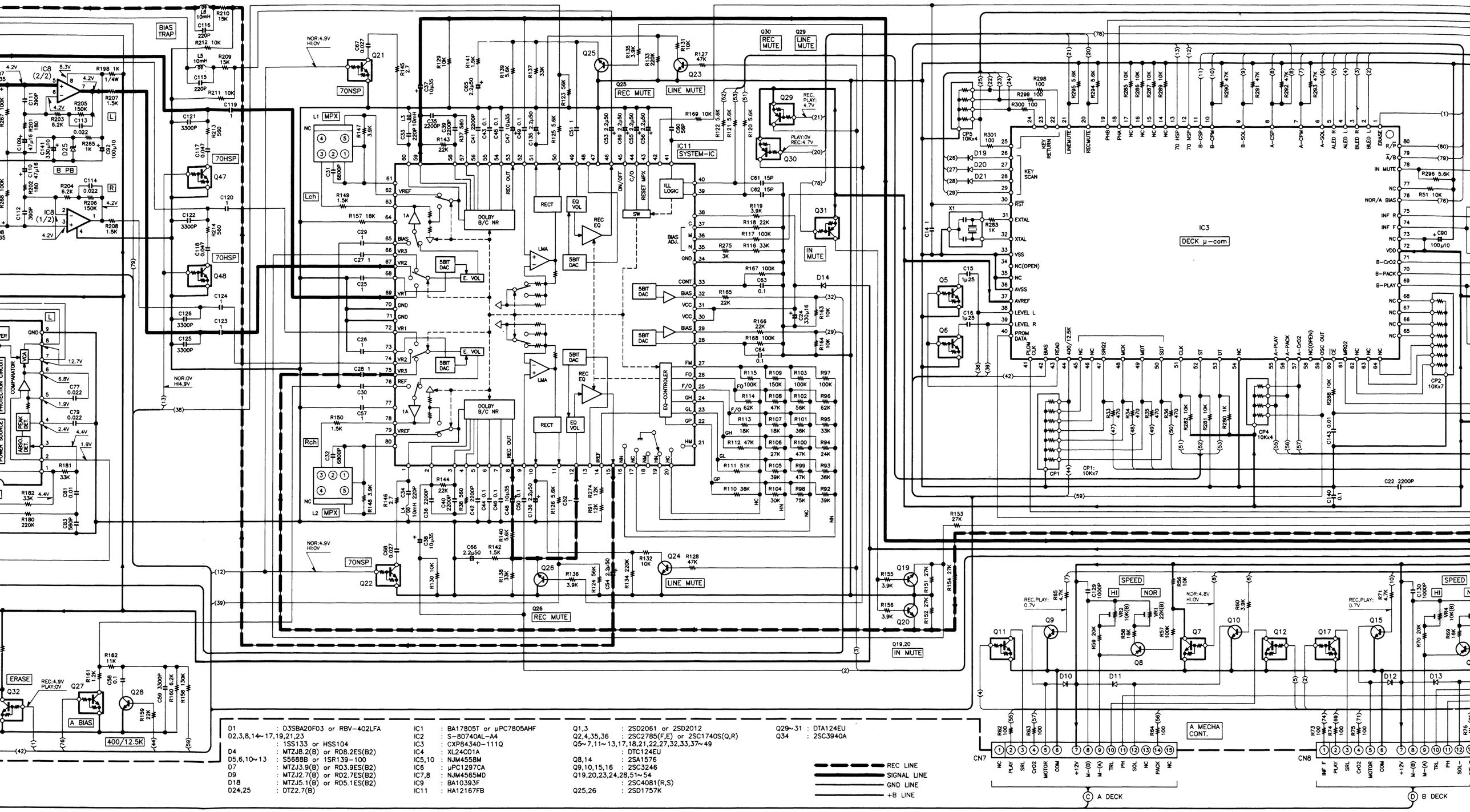
B MECHA. (D40-1364-*5)

RECORD/PLAY BACK UNIT (X28-2662-70)(A/4)

D1 : D3SBA20F03 or RBV-402LFA
D2,3,8,14~17,19,21,23 : 1SS133 or HSS104
D4 : MTZJ8.2(B) or RD8.2ES(B2)
D5,6,10~13 : S5688B or 1SR139-100
D7 : MTZJ3.9(B) or RD3.9ES(B2)
D9 : MTZJ2.7(B) or RD2.7ES(B2)
D18 : MTZJ5.1(B) or RD5.1ES(B2)
D24,25 : DTZ2.7(B)

IC1 : BA17805T or μPC7805AHF
IC2 : S-80740AL-A4
IC3 : CXP84340-111Q
IC4 : XL24C01A
IC5,10 : NJM4558M
IC6 : μPC1297CA
IC7,8 : NJM4565MD
IC9 : BA10393F
IC11 : HA12167FB

Q1,3 : 2SD2061 or 2SD2012
Q2,4,35,36 : 2SC2785(F,E) or 2SC1740S(Q,R)
Q5~7,11~13,17,18,21,22,27,32,33,37~49 : DTC124EU
Q8,14 : 2SA1576
Q9,10,15,16 : 2SC3246
Q19,20,23,24,28,51~54 : 2SC4081(R,S)
Q25,26 : 2SD1757K

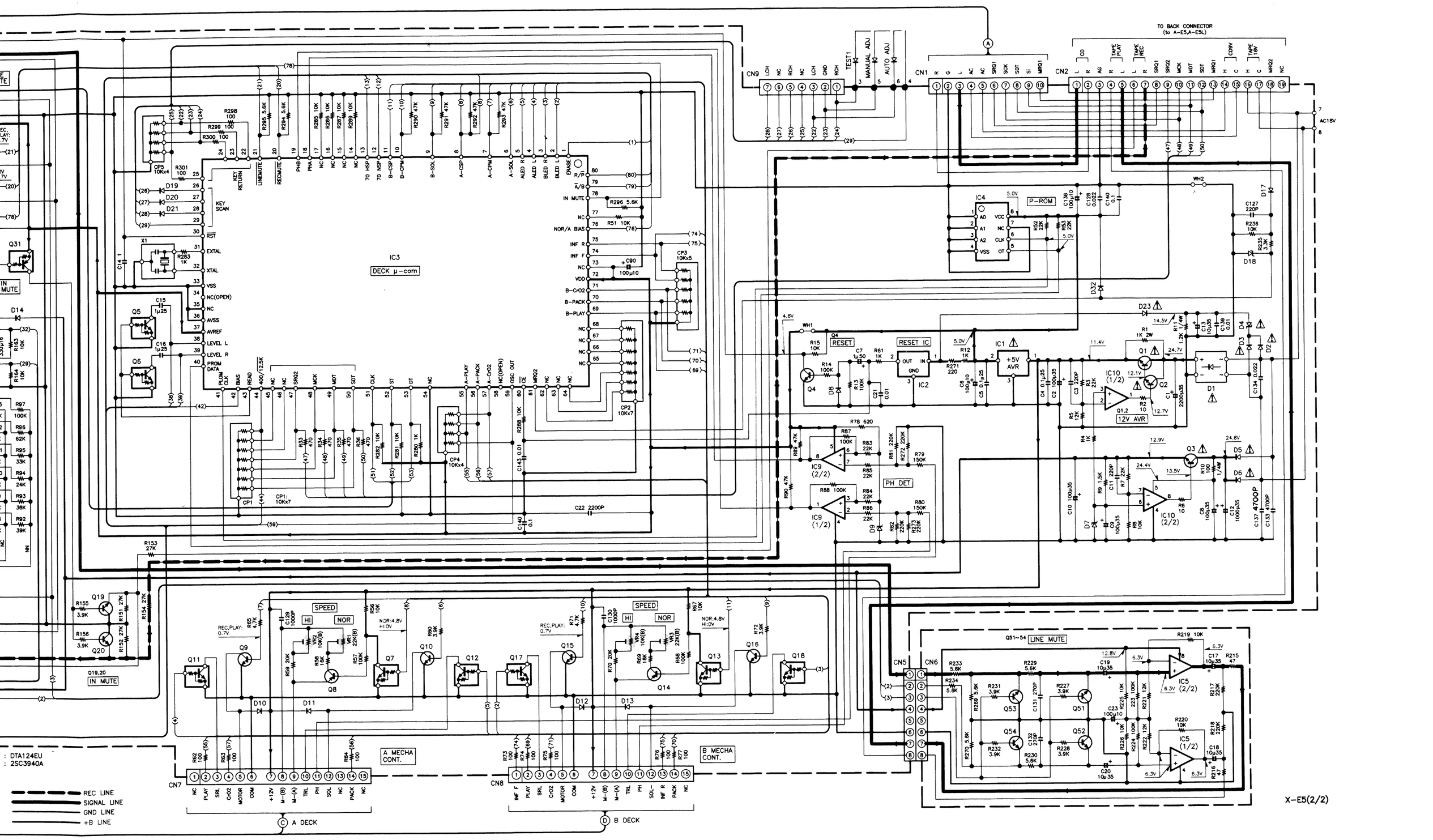


D1	: D3SBA20F03 or RBV-402LFA	IC1	: BA17805T or μPC7805AHF	Q1,3	: 2SD2061 or 2SD2012	Q29~31	: DTA124EU
D2,3,8,14~17,19,21,23	: 1SS133 or HSS104	IC2	: S-80740AL-A4	Q2,4,35,36	: 2SC2785(F,E) or 2SC1740S(Q,R)	Q34	: 2SC3940A
D4	: MTZJ8.2(B) or RD8.2ES(B2)	IC3	: CXP84340-111Q	Q5~7,11~13,17,18,21,22,27,32,33,37~49	: DTC124EU		
D5,6,10~13	: S5688B or 1SR139-100	IC4	: XL24C01A	Q8,14	: 2SA1576		
D7	: MTZJ3.9(B) or RD3.9ES(B2)	IC5,10	: NJM4558M	Q9,10,15,16	: 2SC3246		
D9	: MTZJ2.7(B) or RD2.7ES(B2)	IC6	: μPC1297CA	Q19,20,23,24,28,51~54	: 2SC4081(R,S)		
D18	: MTZJ5.1(B) or RD5.1ES(B2)	IC7,8	: NJM4565MD	Q25,26	: 2SD1757K		
D24,25	: DTZ2.7(B)	IC9	: BA10393F				
		IC11	: HA12167FB				

REC LINE
SIGNAL LINE
GND LINE
+B LINE

- DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly du between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list) safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (expo acceptably insulated from the supply circuit) before the appliance is returned to the customer.DOLBY and the double-D symbol are Dolby Laboratories Licensing Corporation. Noise reduction circuit made under license from Dolby Laboratories Licensing Corporatio



- DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

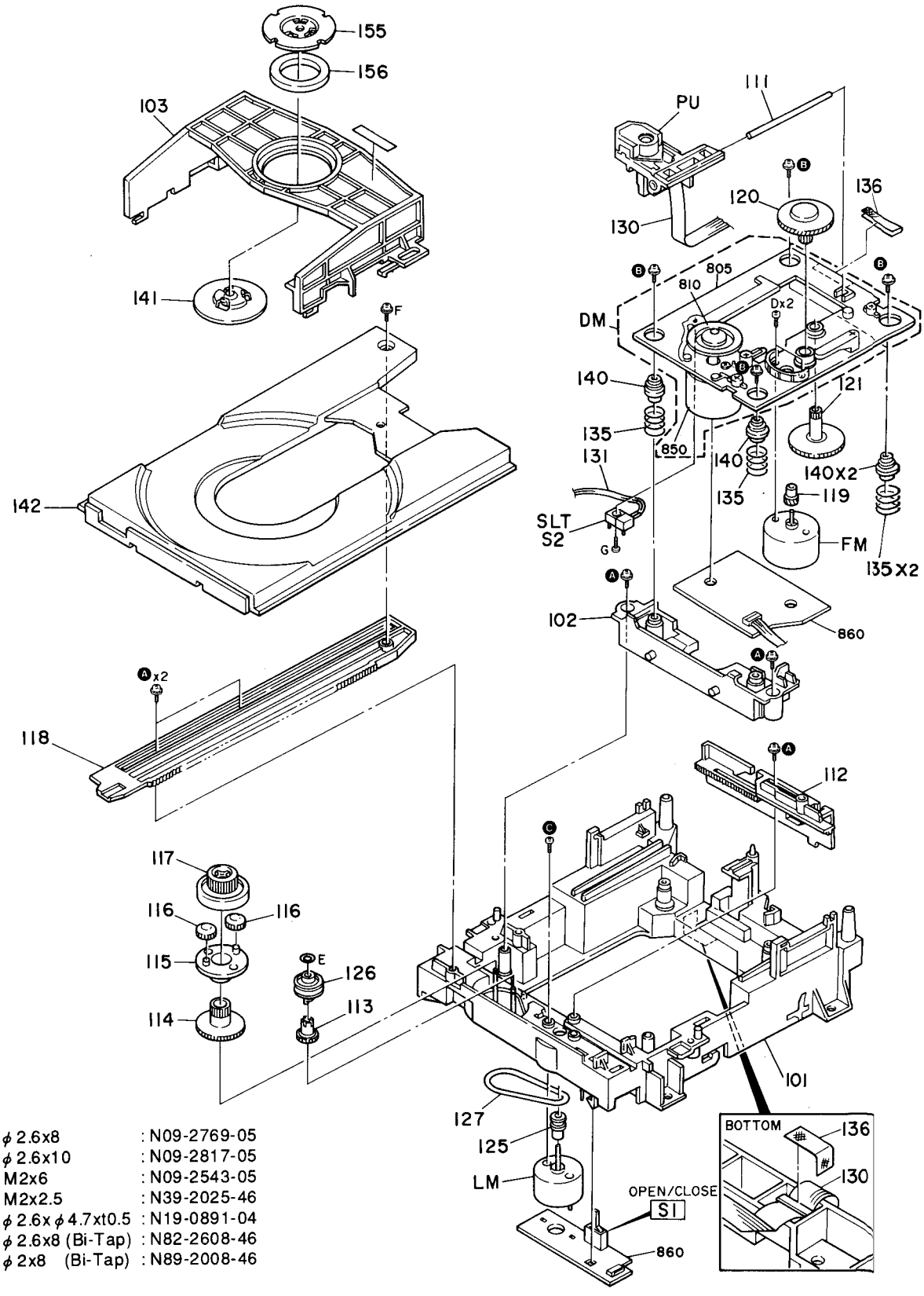
CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.DOLBY and the double-D symbol are tradmarks of Dolby Laboratories Licensing Corporation. Noise reduction circuit made under license from Dolby Laboratories Licensing Corporation.

Y39-2060-21

X-E5

KENWOOD

EXPLODED VIEW (CD MECHANISM)

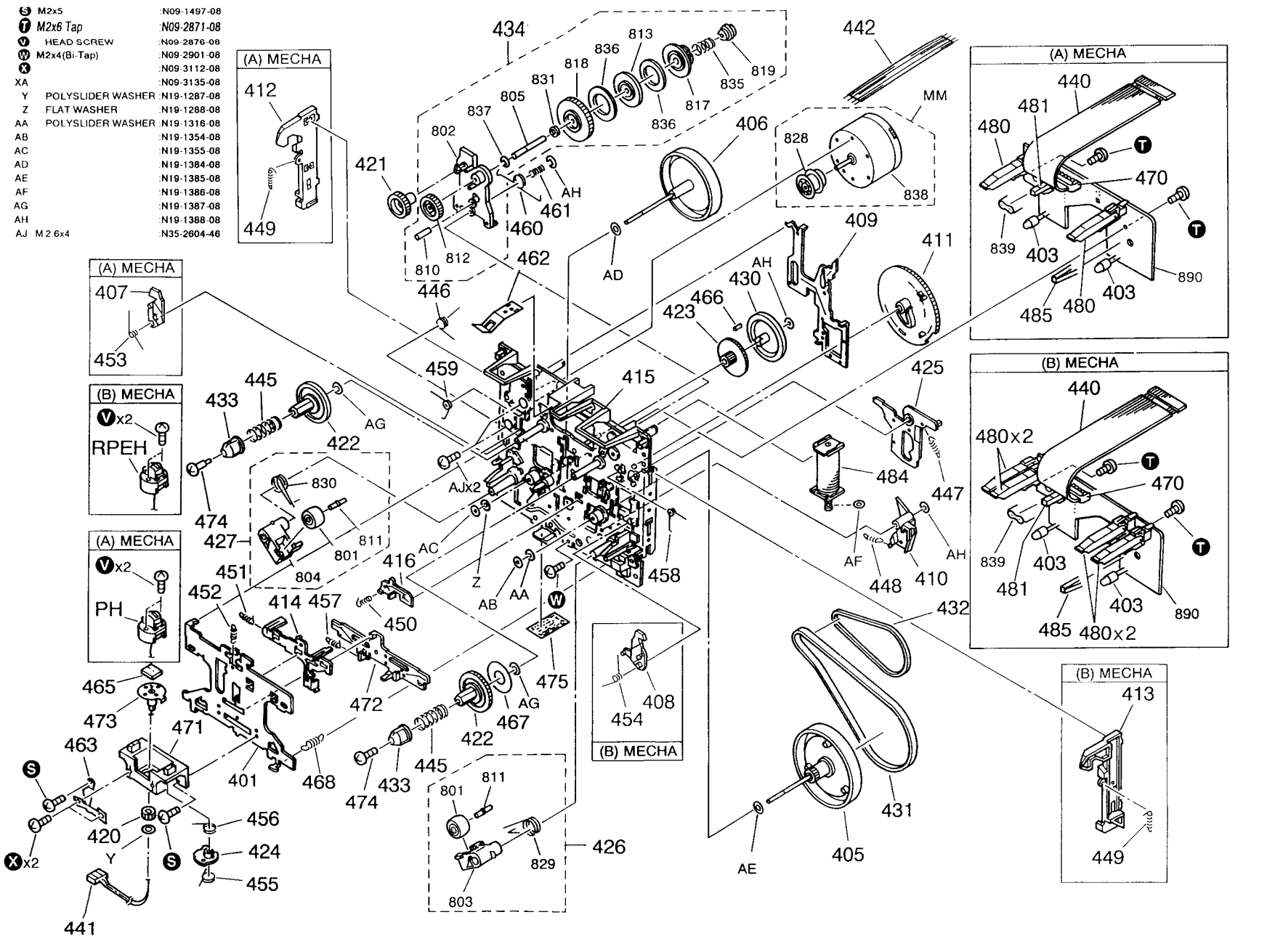


Parts with the exploded numbers larger than 700 are not supplied.

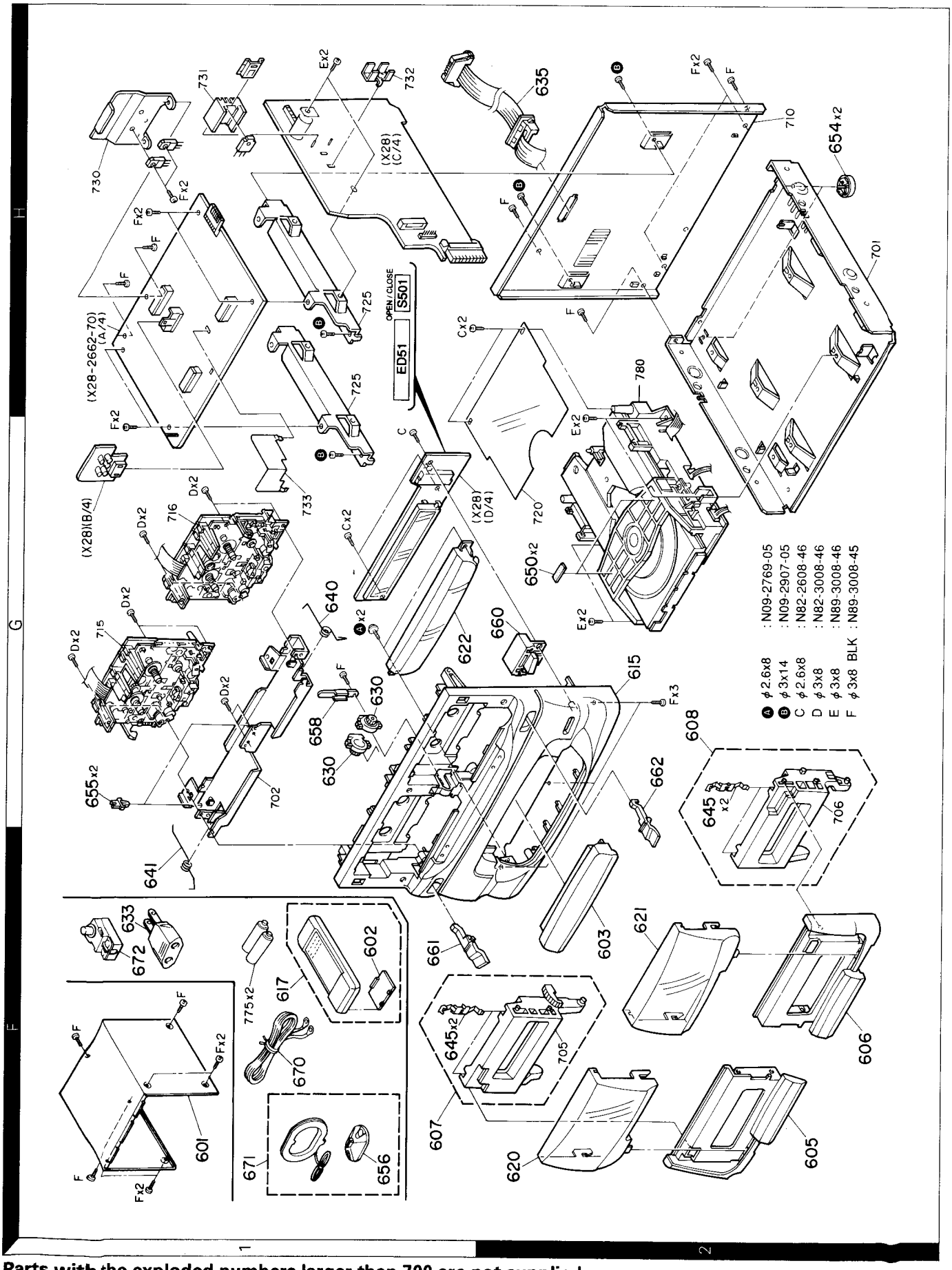
X-E5

EXPLODED VIEW (CASSETTE MECHANISM)

S	M2x5	:N09-1497-08
T	M2x6 Tap	:N09-2871-08
V	HEAD SCREW	:N09-2876-08
W	M2x4(Bi-Tap)	:N09-2901-08
X		:N09-3112-08
XA		:N09-3135-08
Y	POLYSLIDER WASHER	:N19-1287-08
Z	FLAT WASHER	:N19-1288-08
AA	POLYSLIDER WASHER	:N19-1316-08
AB		:N19-1354-08
AC		:N19-1355-08
AD		:N19-1384-08
AE		:N19-1385-08
AF		:N19-1386-08
AG		:N19-1387-08
AH		:N19-1388-08
AJ	M2.6x4	:N35-2604-46



EXPLODED VIEW (UNIT)



Parts with the exploded numbers larger than 700 are not supplied.

X-E5

PARTS LIST

＊ New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
			X-E5			
601	1F	*	A01-3144-11	METALLIC CABINET		
602	1F	*	A09-0106-08	BATTERY COVER		
603	2F		A29-0371-03	PANEL (CD TRAY)		
605	2F	*	A53-1806-02	CASSETTE LID		A
606	2F	*	A53-1807-02	CASSETTE LID		B
607	1F	*	A53-1808-03	CASSETTE HOLDER ASSY		A
608	2G	*	A53-1809-03	CASSETTE HOLDER ASSY		B
615	2G	*	A60-0596-11	PANEL (FRONT)		
617	1F		A70-0981-05	REMOTE CONTROLLER ASSY		
		*	B60-1657-00	INSTRUCTION MANUAL (ENGLISH)	MXTE	
		*	B60-1658-00	INSTRUCTION MANUAL (FRENCH)	E	
		*	B60-1659-00	INSTRUCTION MANUAL (GERMAN)	EG	
		*	B60-1660-00	INSTRUCTION MANUAL (DUTCH)	E	
		*	B60-1661-00	INSTRUCTION MANUAL (ITALIAN)	E	
		*	B60-1662-00	INSTRUCTION MANUAL (SPANISH)	ME	
		*	B60-1664-00	INSTRUCTION MANUAL (CHINESE)	M	
		*	B60-1891-00	INSTRUCTION MANUAL (TAIWANESE)	M	
620	2F		B10-2032-02	FRONT GLASS		A
621	2F	*	B10-2033-02	FRONT GLASS		B
622	1G	*	B10-2034-13	FRONT GLASS (CD)		
-			B46-0096-43	WARRANTY CARD	X	
-			B46-0310-03	WARRANTY CARD	TEG	
-			B58-0965-13	CAUTION CARD	XT	
-			B58-0966-13	CAUTION CARD	ME	
-			B58-0970-13	CAUTION CARD	G	
-		*	B58-0980-04	CAUTION CARD		
630	1G		D39-0316-05	DAMPER		
⚠ 633	1F		E03-0115-05	AC PLUG ADAPTER	M	
635	2H		E30-2771-05	CORD WITH CONNECTOR (19PIN)		
640	1G		G01-3652-24	TORSION COIL SPRING		
641	1F		G01-3653-24	TORSION COIL SPRING		
645	2G		G02-1059-04	FLAT SPRING		
650	2G		G11-2020-04	CUSHION		
			H13-0086-04	CARTON BOARD		
			H50-1116-04	ITEM CARTON CASE	TEG	S
			H50-1118-04	ITEM CARTON CASE	TEG	W
		*	H50-1282-04	ITEM CARTON CASE	X	S
		*	H50-1283-04	ITEM CARTON CASE	M	S
			H50-1284-04	ITEM CARTON CASE	X	W
		*	H50-1285-04	ITEM CARTON CASE	M	W
		*	H50-1286-04	ITEM CARTON CASE	I	W
-		*	H10-5796-12	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-5797-12	POLYSTYRENE FOAMED FIXTURE		
-			H10-5800-12	POLYSTYRENE FOAMED FIXTURE		W
-			H10-5801-12	POLYSTYRENE FOAMED FIXTURE		W
-		*	H20-0587-04	PROTECTION COVER	M	
-			H25-0632-24	PROTECTION BAG	MXEG	
-			H25-0644-04	PROTECTION BAG (0632 PRINTED)	T	
-			H25-0672-04	PROTECTION BAG	XTEG	
654	2H		J02-0370-05	FOOT		

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655	1G		J11-0129-05	WIRE CLAMPER		
656	1F		J19-3645-05	LOOP ANTENA STAND		
658	1G		J21-6125-04	MOUNTING HARDWARE		
660	2G		K29-5947-04	KNOB (OPEN/CLOSE)		
661	1F	*	K29-5983-04	KNOB (EJECT)		A
662	2G	*	K29-5984-04	KNOB (EJECT)		B
670	1F		T90-0182-15	LEAD WIRE ANTENNA		
671	1F		T90-0195-05	LOOP ANTENNA		
672	1F		T90-0198-05	ANTENNA ADAPTOR	TEG	
			X28-2662-70	RECORD/PLAYBACK UNIT		
RECORD/PLAYBACK UNIT (X28-2662-70)						
C1			CE04LW1V222M	ELECTRO 2200UF 35WV		
C2			CE04LW1V101M	ELECTRO 100UF 35WV		
C3			CC73FSL1H221J	CHIP C 220PF J		
C4 ,5			CK73FB1E104K	CHIP C 0.10UF K		
C6			CE04LW1A101M	ELECTRO 100UF 10WV		
C7			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C8 -10			CE04LW1V101M	ELECTRO 100UF 35WV		
C11			CC73FSL1H221J	CHIP C 220PF J		
C12			CE04LW1V102M	ELECTRO 1000UF 35WV		
C13			CE04LW1V100M	ELECTRO 10UF 35WV		
C14 -16			CK73FF1C105Z	CHIP C 1.0UF Z		
C17 -20			CE04LW1V100M	ELECTRO 10UF 35WV		
C21			CQ93FMG1H103J	MYLAR 0.010UF J		
C22			CQ93FMG1H222J	MYLAR 2200PF J		
C23			CE04LW1A101M	ELECTRO 100UF 10WV		
C24			CE04LW1C331M	ELECTRO 330UF 16WV		
C25 -30			CK73FF1C105Z	CHIP C 1.0UF Z		
C31 ,32			CK73FB1H682K	CHIP C 6800PF K		
C33 ,34			CC73FSL1H221J	CHIP C 220PF J		
C35 ,36			CK73FB1H222K	CHIP C 2200PF K		
C37 ,38			CE04LW1V100M	ELECTRO 10UF 35WV		
C39 -42			CK73FB1H222K	CHIP C 2200PF K		
C43 -46			CK73FB1E104K	CHIP C 0.10UF K		
C47 ,48			CE04LW1V100M	ELECTRO 10UF 35WV		
C49 ,50			CK73FB1E104K	CHIP C 0.10UF K		
C51 ,52			CK73FF1C105Z	CHIP C 1.0UF Z		
C53 -56			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C57			CK73FF1C105Z	CHIP C 1.0UF Z		
C58			CQ93FMG1H104J	MYLAR 0.10UF J		
C59			CQ93FMG1H332J	MYLAR 3300PF J		
C60			CC73FSL1H560J	CHIP C 56PF J		
C61 ,62			CC73FSL1H150J	CHIP C 15PF J		
C63 ,64			CK73FB1E104K	CHIP C 0.10UF K		
C65 ,66			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C67 ,68			CK73FB1H273K	CHIP C 0.027UF K		
C69			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C70			CE04LW1V100M	ELECTRO 10UF 35WV		
C71			CE04LW1H010M	ELECTRO 1.0UF 50WV		
C72			CE04LW1V100M	ELECTRO 10UF 35WV		
C73			CK73FB1H103K	CHIP C 0.010UF K		
C74 ,75			CK73FB1H562K	CHIP C 5600PF K		
C76			CQ93HP2A103J	MYLAR 0.010UF J		

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C77 -80			CK73FB1H223K	CHIP C 0.022UF K		
C81 ,82			CK73FB1H103K	CHIP C 0.010UF K		
C83 ,84			CK73FB1H561K	CHIP C 560PF K		
C85 ,86			C91-1436-05	FILM 220PF J		
C87 ,88			C91-1434-05	FILM 150PF J		
C89			CC45FSL2H100D	CERAMIC 10PF D		
C90 -92			CE04LW1A101M	ELECTRO 100UF 10WV		
C93 ,94			CC73FSL1H221J	CHIP C 220PF J		
C95 ,96			CE04LW1C470M	ELECTRO 47UF 16WV		
C97 ,98			CE04LW1V100M	ELECTRO 10UF 35WV		
C99 ,100			CC73FSL1H391J	CHIP C 390PF J		
C101,102			CK73FB1H561K	CHIP C 560PF K		
C103,104			CK73FB1H223K	CHIP C 0.022UF K		
C105,106			CK45FB1H681K	CERAMIC 680PF K		
C107,108			CE04LW1V100M	ELECTRO 10UF 35WV		
C109,110			CE04LW1C470M	ELECTRO 47UF 16WV		
C111,112			CC73FSL1H391J	CHIP C 390PF J		
C113,114			CK73FB1H223K	CHIP C 0.022UF K		
C115,116			CC73FSL1H221J	CHIP C 220PF J		
C117,118			CK73FB1H473K	CHIP C 0.047UF K		
C119,120			CK73FF1C105Z	CHIP C 1.0UF Z		
C121,122			CQ93FMG1H332J	MYLAR 3300PF J		
C123,124			CK73FF1C105Z	CHIP C 1.0UF Z		
C125,126			CQ93FMG1H332J	MYLAR 3300PF J		
C127			CC45FSL1H221J	CERAMIC 220PF J		
C128			CK73FB1H223K	CHIP C 0.022UF K		
C129,130			CK73FB1H102K	CHIP C 1000PF K		
C131,132			CC73FSL1H271J	CHIP C 270PF J		
C133			CK45FF1H472Z	CERAMIC 4700PF Z		
C134			CK45FF1H223Z	CERAMIC 0.022UF Z		
C135,136			CE04LW1H2R2M	ELECTRO 2.2UF 50WV		
C137			CK45FF1H472Z	CERAMIC 4700PF Z		
C138			CE04LW1A101M	ELECTRO 100UF 10WV		
C139			CK73FB1H103K	CHIP C 0.010UF K		
C140			CQ93FMG1H104J	MYLAR 0.10UF J		
C141,142			CE04LW1A331M	ELECTRO 330UF 10WV		
C143			CK73FB1H103K	CHIP C 0.010UF K		
C501			CC73FSL1H101J	CHIP C 100PF J		
C502			CK73FF1C105Z	CHIP C 1.0UF Z		
C503,504			CK73FB1E104K	CHIP C 0.10UF K		
C505			CC73FSL1H470J	CHIP C 47PF J		
C506			CK73FB1H332K	CHIP C 3300PF K		
C507			CK73FB1H222K	CHIP C 2200PF K		
C508			CK73FB1H103K	CHIP C 0.010UF K		
C509			CK73FB1E104K	CHIP C 0.10UF K		
C510			CK73FB1E563K	CHIP C 0.056UF K		
C511,512			CK73FB1H103K	CHIP C 0.010UF K		
C513			CK73FB1H473K	CHIP C 0.047UF K		
C514			CK73FB1H103K	CHIP C 0.010UF K		
C515			CE04HW1E100M	NP-ELEC 10UF 25WV		
C516			CC73FSL1H221J	CHIP C 220PF J		
C517			CE04LW1A101M	ELECTRO 100UF 10WV		
C518			CK73FB1H333K	CHIP C 0.033UF K		
C519			CE04LW1E100M	ELECTRO 10UF 25WV		
C520			CK73FB1H333K	CHIP C 0.033UF K		

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C521			CK73FB1H561K	CHIP C 560PF K		
C522			CK73FB1H102K	CHIP C 1000PF K		
C523			CC73FSL1H221J	CHIP C 220PF J		
C524			CK73FF1C105Z	CHIP C 1.0UF Z		
C525			CK45FF1H103Z	CERAMIC 0.010UF Z		
C526,527			CK73FB1H102K	CHIP C 1000PF K		
C528			CK73EB1C474K	CHIP C 0.47UF K		
C529			CK73FB1H103K	CHIP C 0.010UF K		
C530			CK73FB1H152K	CHIP C 1500PF K		
C531			CK73FB1H473K	CHIP C 0.047UF K		
C532			CE04LW0J221M	ELECTRO 220UF 6.3WV		
C533			CK73FB1H103K	CHIP C 0.010UF K		
C534			CE04LW1A101M	ELECTRO 100UF 10WV		
C535			CK45FF1H103Z	CERAMIC 0.010UF Z		
C536,537			CE04LW0J221M	ELECTRO 220UF 6.3WV		
C538			CK45FF1H103Z	CERAMIC 0.010UF Z		
C539			CC45FSL1H101J	CERAMIC 100PF J		
C540			CK73FB1H562K	CHIP C 5600PF K		
C541,542			CQ93FMG1H562J	MYLAR 5600PF J		
C543,544			CF92FV1H564J	MF 0.56UF J		
C545			CE04LW0J221M	ELECTRO 220UF 6.3WV		
C546,547			CE04LW1A101M	ELECTRO 100UF 10WV		
C548			CK73FB1H103K	CHIP C 0.010UF K		
C549			CC73FSL1H270J	CHIP C 27PF J		
C550			CK45FF1H103Z	CERAMIC 0.010UF Z		
⚠ C552			CE04LW1A331M	ELECTRO 330UF 10WV		
C553			CK73FB1H103K	CHIP C 0.010UF K		
C554			CK45FF1H103Z	CERAMIC 0.010UF Z		
C555			CK73FB1H103K	CHIP C 0.010UF K		
C557,558			CK73FF1C105Z	CHIP C 1.0UF Z		
C559,560			CE04HW1E100M	NP-ELEC 10UF 25WV		
C561			CK73FB1H103K	CHIP C 0.010UF K		
C563			CK73FB1H103K	CHIP C 0.010UF K		
C564			CE04LW1C101M	ELECTRO 100UF 16WV		
C565			CK73FB1H222K	CHIP C 2200PF K		
C571			CK73FB1H103K	CHIP C 0.010UF K		
C572			CE04LW1C332M	ELECTRO 3300UF 16WV		
C573,574			CK45FF1H103Z	CERAMIC 0.010UF Z		
C575			CK45FB1H152K	CERAMIC 1500PF K		
C576			CE04LW1V470M	ELECTRO 47UF 35WV		
C577			CK45FF1H103Z	CERAMIC 0.010UF Z		
C578			CQ93FMG1H473J	MYLAR 0.047UF J		
C579,580			CK45FB1H102K	CERAMIC 1000PF K		
J1 ,2			J11-0098-05	WIRE CLAMPER		
J502			J11-0098-05	WIRE CLAMPER		
L1 ,2			L79-1201-05	LC FILTER		
L3 -6			L40-1035-29	SMALL FIXED INDUCTOR(10MH, J)		
L7 ,8			L32-0547-05	BIAS OSCILATING COIL		
L9			L32-0570-05	BIAS OSCILATING COIL		
L501			L19-0076-05	TRANSFORMER FOR CONVERTER		
X1			L78-0294-05	RESONATOR (10.000M)		
X501			L78-0299-05	RESONATOR (16.93M)		
CP1 ,2			R90-0815-05	MULTI-COMP 10K X7		

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X-E5

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CP3			R90-0856-05	MULTI-COMP 10KX5 J 1/6W		
CP4 ,5			R90-0809-05	MULTI-COMP 10KX4 J 1/6W		
R1			RS14KB3D102J	FL-PROOF RS 1.0K J 2W		
R10			RD14NB2E101J	RD 100 J 1/4W		
R11			RD14NB2E122J	RD 1.2K J 1/4W		
R176-178			RD14NB2E100J	RD 10 J 1/4W		
R237			RD14NB2E680J	RD 68 J 1/4W		
R598			RS14KB3DR68J	FL-PROOF RS 0.68 J 2W		
VR1			R12-3686-05	TRIMMING POT.(22K)		
VR2			R12-3685-05	TRIMMING POT.(10K)		
VR3			R12-3686-05	TRIMMING POT.(22K)		
VR4			R12-3685-05	TRIMMING POT.(10K)		
VR51,52			R12-3129-05	TRIMMING POT.(22K)		
W501-504			R92-0679-05	CHIP R 0 OHM		
W506-519			R92-0679-05	CHIP R 0 OHM		
W521-529			R92-0679-05	CHIP R 0 OHM		
W531-540			R92-0679-05	CHIP R 0 OHM		
W543-560			R92-0679-05	CHIP R 0 OHM		
K1			S76-0018-05	MAGNETIC RELAY		
S501			S40-1064-05	PUSH SWITCH		
⚠ D1			D3SBA20F03	DIODE		
⚠ D1			RBV-402LFA	DIODE		
⚠ D2 ,3			HSS104	DIODE		
⚠ D2 ,3			1SS133	DIODE		
⚠ D4			MTZJ8.2(B)	ZENER DIODE		
⚠ D4			RD8.2ES(B2)	ZENER DIODE		
⚠ D5 ,6			S5688B	DIODE		
⚠ D5 ,6			1SR139-100	DIODE		
D7			MTZJ3.9(B)	ZENER DIODE		
D7			RD3.9ES(B2)	ZENER DIODE		
D8			HSS104	DIODE		
D8			1SS133	DIODE		
D9			MTZJ2.7(B)	ZENER DIODE		
D9			RD2.7ES(B2)	ZENER DIODE		
D10 -13			S5688B	DIODE		
D10 -13			1SR139-100	DIODE		
D14 -17			HSS104	DIODE		
D14 -17			1SS133	DIODE		
D18			MTZJ5.1(B)	ZENER DIODE		
D18			RD5.1ES(B2)	ZENER DIODE		
D19 -21			HSS104	DIODE		
D19 -21			1SS133	DIODE		
⚠ D23			HSS104	DIODE		
⚠ D23			1SS133	DIODE		
D24 ,25			DTZ2.7(B)	ZENER DIODE		
D501			1SS355	DIODE		
D502,503			HSS104	DIODE		
D502,503			1SS133	DIODE		
D504			MTZJ2.7(B)	ZENER DIODE		
D504			RD2.7ES(B2)	ZENER DIODE		
D505,506			HSS104	DIODE		
D505,506			1SS133	DIODE		
D507			MTZJ5.1(B)	ZENER DIODE		
D507			RD5.1ES(B2)	ZENER DIODE		

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	D508			HSS104	DIODE		
	D508			1SS133	DIODE		
	D509			HSS104A	DIODE		
	D509			1SS131	DIODE		
	D510			HSS104	DIODE		
	D510			1SS133	DIODE		
⚠	D521			KBP02ML-6127	DIODE		
	D522,523			MTZJ15(B)	ZENER DIODE		
	D522,523			RD15ES(B2)	ZENER DIODE		
	D524			1SS92	DIODE		
	D524			1S954	DIODE		
	D525			MTZJ6.8(B)	ZENER DIODE		
	D525			RD6.8ES(B2)	ZENER DIODE		
	D526-530			HSS104A	DIODE		
	D526-530			1SS131	DIODE		
	ED51			10-BT-147GK	INDICATOR TUBE		
⚠	IC1			BA17805T	IC(VOLTAGE REGULATOR/ +5V)		
⚠	IC1			UPC7805AHF	IC(VOLTAGE REGULATOR/ +5V)		
	IC2			S-80740AL-A4	IC(VOLTAGE DETECTOR)		
	IC3			CXP84340-111Q	MI-COM IC		
	IC4			XL24C01A	MEMORY IC		
	IC5			NJM4558M	IC(OP AMP X2)		
	IC6			UPC1297CA	IC(DOL HX PRO SYSTEM)		
	IC7 ,8			NJM4565MD	IC(OP AMP X2)		
	IC9			BA10393F	IC		
	IC10			NJM4558M	IC(OP AMP X2)		
	IC11			HA12167FB	IC(DOLBY B/C, REC EQ)		
	IC51			CXA1372Q	IC(CD RF SERVO)		
	IC52			CXD2507Q	MOS-IC		
	IC53			UPD78044AGF-018	MI-COM IC		
	IC54			SM5875BM	MOS-IC		
	IC55			BA6398FP	ANALOGUE IC		
	IC56			TA8409S	IC(MOTOR CONTROL)		
⚠	Q1			2SD2012	TRANSISTOR		
⚠	Q1			2SD2061	TRANSISTOR		
⚠	Q2			2SC1740S(Q,R)	TRANSISTOR		
⚠	Q2			2SC2785(F,E)	TRANSISTOR		
⚠	Q3			2SD2012	TRANSISTOR		
⚠	Q3			2SD2061	TRANSISTOR		
	Q4			2SC1740S(Q,R)	TRANSISTOR		
	Q4			2SC2785(F,E)	TRANSISTOR		
	Q5 -7			DTC124EU	DIGITAL TRANSISTOR		
	Q8			2SA1576	TRANSISTOR		
	Q9 ,10			2SC3246	TRANSISTOR		
	Q11 -13			DTC124EU	DIGITAL TRANSISTOR		
	Q14			2SA1576	TRANSISTOR		
	Q15 ,16			2SC3246	TRANSISTOR		
	Q17 ,18			DTC124EU	DIGITAL TRANSISTOR		
	Q19 ,20			2SC4081(R,S)	TRANSISTOR		
	Q21 ,22			DTC124EU	DIGITAL TRANSISTOR		
	Q23 ,24			2SC4081(R,S)	TRANSISTOR		
	Q25 ,26			2SD1757K	TRANSISTOR		
	Q27			DTC124EU	DIGITAL TRANSISTOR		
	Q28			2SC4081(R,S)	TRANSISTOR		
	Q29 -31			DTA124EU	DIGITAL TRANSISTOR		

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Q32 ,33			DTC124EU	DIGITAL TRANSISTOR		
Q34			2SC3940A	TRANSISTOR		
Q35 ,36			2SC1740S(Q,R)	TRANSISTOR		
Q35 ,36			2SC2785(F,E)	TRANSISTOR		
Q37 -49			DTC124EU	DIGITAL TRANSISTOR		
Q51 -54			2SC4081(R,S)	TRANSISTOR		
⚠ Q501			2SB1370(E,F)	TRANSISTOR		
⚠ Q501			2SB1375	TRANSISTOR		
Q502			2SC1740S(Q,R)	TRANSISTOR		
Q502			2SC2785(F,E)	TRANSISTOR		
Q503,504			DTC113ZS	DIGITAL TRANSISTOR		
Q503,504			UN4219	TRANSISTOR		
Q505			2SC1740S(Q,R)	TRANSISTOR		
Q505			2SC2785(F,E)	TRANSISTOR		
Q506			2SB1167(R,S)	TRANSISTOR		
Q506			2SB1168(R,S)	TRANSISTOR		
CD MECHANISM (X92-1759-81)						
101	3B	*	A10-2974-11	CHASSIS (MAIN)		
102	2B	*	A11-0756-03	SUB CHASSIS (FRAME)		
103	1A	*	A11-0757-02	SUB CHASSIS (CLAMPER)		
DM	1B		A11-0733-05	SUB CHASSIS ASSY (DISC MOTOR)		
111	1B		D10-2490-04	ROD		
112	2B		D10-3253-03	SLIDER		
113	3A		D13-0975-04	GEAR (INTERMEDIATE)		
114	3A		D13-0976-03	GEAR (CENTER)		
115	3A		D13-0977-03	GEAR (CARRIER)		
116	3A		D13-0978-03	GEAR (IDLER)		
117	2A		D13-0979-03	GEAR (MAIN)		
118	2A		D13-0980-02	LACK (GEAR)		
119	2B		D13-0894-05	GEAR (MOTOR)		
120	1B		D13-0895-05	GEAR (INTERMEDIATE)		
121	1B		D13-0896-05	GEAR (FEED)		
125	3B		D15-0328-04	MOTOR PULLEY		
126	3A		D15-0329-03	PULLEY		
127	3B	*	D16-0333-03	BELT		
130	1B	*	E35-0903-15	FLAT CABLE (12PIN)		
131	2B		E35-0420-05	LEAD WIRE		
135	2B		G01-3326-14	COMPRESSION SPRING		
136	1B		G10-0146-04	NON-WOVEN FABRIC		
140	1B,2B		J02-1058-15	INSULATOR		
141	1A		J11-0180-03	CLAMPER		
142	2A	*	J99-0514-01	TRAY		
S1	3B		S33-2062-05	LEVER SWITCH (OPEN/CLOSE)		
S2	2B		S33-1022-05	LEVER SWITCH (SLT)		
155	1A		T50-1058-04	YOKE		
156	1A		T99-0503-15	MAGNET		
FM	2B		T42-0532-05	DC MOTOR (FEED MOTOR)		
LM	3B		T42-0609-05	DC MOTOR (LOADING MOTOR)		
PU	1B		T25-0022-05	OPTICAL PICKUP HEAD (KSS-240A)		
MECHANISM ASS'Y (D40-136X-XX) 3-X5 : A MECHA 4-X5 : B MECHA						
401	2C		A10-3174-08	HEAD CHASSIS		

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403	1E,2E		B30-2409-08	LED SEL2415E		
405	2E		D01-0175-08	FLYWHEEL (R) ASSY		
406	1D		D01-0176-08	FLYWHEEL (L) ASSY		
407	1C		D10-3468-08	INTER L@CK ARM (L)(A MECHA)		
408	2D		D10-3469-08	INTER L@CK ARM (R)(B MECHA)		
409	1E		D10-3470-08	SHIFT LEVER		
410	2E		D10-3471-08	HEAD CHANGE ARM		
411	1E		D10-3472-08	CAM GEAR		
412	1C		D10-3476-08	EJECT LEVER (L) (A MECHA)		
413	2E		D10-3477-08	EJECT LEVER (R) (B MECHA)		
414	2C		D10-3478-08	SELET LEVER		
415	1D		D10-3479-08	CHASSIS @S ASSY		
416	2C		D10-3480-08	C/R LEVER		
420	2C		D13-0981-08	R@TATI@N GEAR		
421	1C		D13-1616-08	REW GEAR		
422	1C,2D		D13-1617-08	REEL GEAR		
423	1D		D13-1618-08	IDLER GEAR		
424	2C		D13-1621-08	RETURN GEAR		
425	1E		D13-1622-08	TRIGGER ARM		
426	2D		D14-0367-08	PINCH ARM (R) ASSY		
427	2C		D14-0368-08	PINCH ARM (L) ASSY		
430	1D		D15-0369-08	IDLER PULLEY		
431	2E		D16-0375-08	DRIVE BELT		
432	2E		D16-0376-08	CLUTCH BELT		
433	1C,2C		D19-0270-18	REEL CAP (A)		
434	1D		D19-0287-08	CLUTCH ARM ASSY		
440	1E		E35-0934-08	15P FLAT RIBB@N WIRE		
441	2C	*	E35-1006-08	5P HEAD WIRE ASSY (B MECHA)		
441	2C	*	E35-1007-08	3P HEAD WIRE ASSY (A MECHA)		
442	1E		E35-0986-08	M@T@R WIRE		
445	1C,2D		G01-3709-08	B.T SPRING		
446	1D		G01-3710-08	SHIFT LEVER SP		
447	1E		G01-3711-08	TRIGGER ARM SP		
448	2E		G01-3712-08	HEAD CHANGE ARM SP		
449	1C,2E		G01-3713-08	EJECT SP		
450	2C		G01-3714-08	C/R LEVER SP		
451	2C		G01-3715-08	SELECT SP		
452	2C		G01-3716-08	SHIFT SP		
453	1C		G01-3717-08	INTER L@CK SP (L)		
454	2D		G01-3723-08	INTER L@CK SP (R)		
455	2C		G01-3718-08	RETURN SPR		
456	2C		G01-3719-08	FWD SPR		
457	2C		G01-3720-08	HEAD RETURN PLATE SP		
458	2D		G01-3721-08	BRAKE SP (R)		
459	1D		G01-3722-08	BRAKE SP (L)		
460	1D		G01-3724-08	CLUTCH ARM SPRING (B)		
461	1D		G01-3725-08	CLUTCH SP		
462	1D		G02-0913-08	PACK SPRING		
463	2C		G02-1043-08	AZIMUTH SPR		
465	2C		G11-2117-08	HEAD WIRE CLAMP		
466	1D		G11-2205-08	TUBE		
467	2D		G16-0791-08	REFLECT SEAL		
468	2C		G01-3739-08	HEAD CHASSIS SP		

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470	1E		J19-3652-08	CABLE HOLDER		
471	2C		J19-3709-08	HEAD BASE		
472	2C		J21-6135-08	HEAD RETURN PLATE		
473	2C	*	J21-6199-08	HEAD PLATE ASSY		
474	2C		J42-0183-08	REEL BUSH		
475	2D		J69-0086-08	FILAMENT TAPE		
AA			N19-1316-08	POLY WASHER		
AB			N19-1354-08	NYLON WASHER		
AC			N19-1355-08	NYLON WASHER		
AD			N19-1384-08	POLY WASHER		
AE			N19-1385-08	POLY WASHER		
AF			N19-1386-08	POLY WASHER		
AG			N19-1387-08	TEFRON WASHER		
AH			N19-1388-08	POLY WASHER		
AK			N09-2900-08	SCREW		
S			N09-1497-08	TAP TITE SCREW		
T			N09-2871-08	TAPPING SCREW		
V			N09-2876-08	HEAD SCREW		
W			N09-2901-08	BIND TAP TITE SCREW		
X			N09-3112-08	AZIMUTH SCREW		
Y			N19-1287-08	POLY WASHER		
Z			N19-1288-08	POLY WASHER		
480	1E,2E		S74-0033-08	REC SWITCH		
481	1E,2E		S74-0042-08	PLAY SWITCH		
484	1E		T94-0233-08	SOLENOID ASSY		
485	1E,2E		T95-0125-08	PHOTO INTERRUPTER		
MM	1E		T42-0687-08	MOTOR ASSY		
PH	2C	*	T31-0072-08	ROTATION HD KP-7442-CS-8352		A
RPEH	1C	*	T39-0027-08	ROTATION HD KC-9242-HB-8354		B

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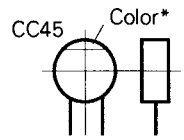
PARTS LIST

CAPACITORS

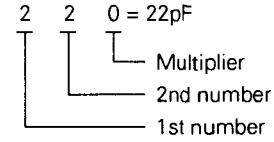
CC 45 TH 1H 220 J
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF



• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF - 10 ~ +50 Less than 4.7μF -10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word / 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

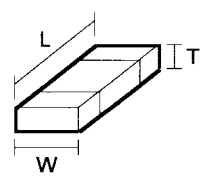
Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

Dimension



• Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

X-E5

SPECIFICATIONS

Cassette deck section

Track ..... **4-track, 2-channel stereo**
Recording system ..... **AC bias system**
(Frequency : 105kHz)
Heads
A deck Playback head **1**
b deck Playback/recording head **1**
Erasing head **1**
Motors
A deck **1**
B deck **1**
Fast winding time ..... **Approx. 110 seconds**
(C-60 tape)
Frequency response
Normal tape ..... **35Hz to 17,000Hz, ±3dB**
CrO_2 tape ..... **35Hz to 18,000Hz, ±3dB**
Signal to noise ratio
Dolby B NR ON ..... **63dB (CrO_2 tape)**
Dolby NR OFF ..... **56dB (CrO_2 tape)**
Harmonic distortion ..... **Less than 3%**
(315Hz, 3rd H.D., 250nWb/m, CrO_2 tape)
Wow and flutter ..... **0.1% (W.R.M.S.)**

CD player section

Laser ..... **Semiconductor laser**
Playing rotation ..... **200rpm~500rpm (CLV)**
Frequency response ..... **8Hz~20kHz, ±1.0dB**
Signal to noise ratio ..... **More than 93dB**
Total harmonic distortion
..... **Less than 0.01% (at 1kHz)**
Channel separation ..... **More than 85dB (at 1kHz)**
Wow and flutter ..... **Unmeasurable limit**

General

Dimensions ..... **W : 270mm (10-5/8")**
H : 205mm (8-1/16")
D : 280mm (11")

Weight (net)
X-E5 ..... **4.5kg (9.9lb)**

Note : KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the General Market (M) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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